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HANDBOOK

TO THE

BIRDS OF AUSTRALIA.

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TO THE
BIRDS OF AUSTRALIA.

BY .
JOHN GOULD, F.R.S., ETC.
AUTHOR OF THE 'BIRDS OF AUSTRALIA,' 'MAMMALS OF
AUSTRALIA,' 'BIRDS OF EUROPE,' 'BIRDS OF ASIA,'
MONOGRAPHS OF THE TROCHILIDÆ,
RAMPHASTIDÆ, TROGONIDÆ,
ODONTOPHORINÆ, ETC.

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PREFACE TO THE SECOND VOLUME.

IN the last paragraph of the Introduction I stated that the various species would be arranged nearly in the same order as in the folio edition ; and, with some trifling exceptions, this rule has been observed, the exceptions being the transposition of two or three of the genera into other parts of their respective Orders. All the Raptores, and as many families of the Insessores as could be conveniently comprised therein, are contained in the first volume ; and I commence the second with the Psittacidæ or Parrots, with which the Order Insessores will be brought to a close. As before stated, they will be followed by the Rasores, Grallatores, and Natatores. I have considered it necessary to add an Appendix at the end of this volume, comprising those birds figured in the folio edition which are not found in Australia, and a Table of the distribution of the species in the seven colonies into which Australia is divided, and a General Index.

HANDBOOK

TO THE

BIRDS OF AUSTRALIA.

Order INSESSORES.

Family PSITTACIDÆ.

No group of birds gives to Australia so tropical and foreign an air as the numerous species of this great family, by which it is tenanted, each and all of which are individually very abundant. Immense flocks of white Cockatoos are sometimes seen perched among the green foliage of the loftiest trees ; the brilliant scarlet breasts of the Rose-hills blaze forth from the yellow flowering *Acaciæ*: the *Trichoglossi* or Honey-eating Parrakeets enliven the flowering branches of the larger *Eucalypti* with their beauty and their lively actions ; the little Grass Parrakeets rise from the plains of the interior and render these solitary spots a world of animation ; nay the very towns, particularly Hobart Town and Adelaide, are constantly visited by flights of this beautiful tribe of birds, which traverse the streets with arrow-like swiftness, and chase each other precisely after the manner the *Cypseli* are seen to do in our own islands. In Tasmania I have seen flocks of from fifty to a hundred of the *Platycercus flaviventris*, like tame pigeons, at the barn-doors in the farm-yards of the settlers, to which they descend for the refuse grain thrown out with the

straw by the threshers. As might naturally be expected, the agriculturist is often annoyed by the destruction certain species effect among his newly-sown and ripening corn, particularly where the land has been recently cleared and is adjacent to the forests. About sixty well-defined species of this family are described in the present work. They appear to constitute four great groups, each comprising several genera, nearly the whole of which are peculiarly Australian.

I shall follow the arrangement of these birds as it is in the folio edition as nearly as possible, and insert in their proper places those species which have been discovered since the completion of that work.

Genus CACATUA, Vieillot.

Australia, the Molucca and Philippine Islands and New Guinea are the great nurseries of the members of this genus. They incubate in holes of trees or in rocks, and lay two white eggs.

Sp. 391. CACATUA GALERITA.

GREAT SULPHUR-CRESTED COCKATOO.

The Crested Cockatoo, White's Journ., pl. at p. 237.

Psittacus galeritus, Lath. Ind. Orn., vol. i. p. 109.

— (*Kakadoe*) *galeritus*, Kuhl, Consp. Psitt. pp. 12, 87.

Great Sulphur-crested Cockatoo, Shaw, Gen. Zool., vol. viii. p. 479.

Crested Cockatoo, Lath. Gen. Hist., vol. ii. p. 205.

Cacatua galerita, Vieill., 2nde édit. du Nouv. Dict. d'Hist. Nat., tom. xvii. p. 11.

Plyctolophus galeritus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 268.

Cacatua chrysolophus, Less. Traité d'Orn., p. 182.

Kakadoe sulfureus major vel australensis, Bourj. de St.-Hil. Perr. tab.

Car'away and *Cur'riang*, Aborigines of New South Wales.

Cacatua galerita, Gould, Birds of Australia, fol., vol. v. pl. 1.

If we regard the White Cockatoo of Tasmania and that of the adjacent continent as mere varieties of each other, this species has a very extensive range.

On a close examination of specimens from different parts of Australia, a decided variation is observable in the form of the bill, but of too trivial a character, in my opinion, to warrant their being considered as distinct. The Tasmanian bird is the largest in every respect, and has the bill, particularly the upper mandible, less abruptly curved, exhibiting a tendency to the form of that organ in the genus *Licmetis*: the bill of the north-western bird is much rounder than that of the White Cockatoo of Tasmania: on this head the late Mr. Elsey furnished me with the following note:—

“ The *Cacatua galerita* of the Victoria has many points of difference from that of the eastern coast, especially in the upper mandible. I find that the mandibles of the Cockatoos differ in a striking manner according to the season, and the kind of food upon which they subsist. When feeding on the seeds of the *Eucalypti*, the brittle outer layers disappear, and the tip becomes hard and sharp, while when feeding on roots grubbed from soft ground, the outer layers are not worn, and the end is square and spade-like. Leichardt mentions that the Cockatoos shot round the gulf had a pink colouring on the breast, and asks whether they were to be considered as a variety. We noticed this fact also; and the first bird I saw was so well coloured on the breast, and the dye so uniform, that it deceived me; but I soon found others in which, not only the breast, but the wings, tail, and face were dyed of a pale rose-colour; spots of the same hue also occurred on their bodies. The cause is this:—all the large sandy river-beds contain a large quantity of iron, and the pools formed in them are usually covered with a thin film of oxide of iron which is transferred to the bird when drinking.”

The crops and stomachs of those killed in Tasmania were very muscular, and contained seeds, grain, native bread (a species of fungus), small tuberous and bulbous roots, and in most instances large stones.

As may be readily imagined, this bird is not regarded

with favour by the agriculturist, upon whose fields of newly-sown grain and ripening maize it commits the greatest devastation ; it is consequently hunted and shot down wherever it is found, a circumstance which tends much to lessen its numbers. It evinces a decided preference for the open plains and cleared lands, rather than for the dense brushes near the coast ; and, except when feeding or reposing on the trees after a repast, the presence of a flock, which sometimes amounts to thousands, is certain to be indicated by their screaming notes, the discordance of which may be easily conceived by those who have heard the peculiarly loud, piercing, grating scream of the bird in captivity, always remembering the immense increase of the din occasioned by the large number of birds emitting their harsh notes at the same moment ; still I considered this annoyance amply compensated by their sprightly actions and the life their snowy forms imparted to the dense and never-varying green of the Australian forest—a feeling participated in by Sir Thomas Mitchell, who says, “amidst the umbrageous foliage, forming dense masses of shade, the White Cockatoos sported like spirits of light.”

The situations chosen for the purpose of nidification vary with the nature of the locality the bird inhabits ; the eggs are usually deposited in the holes of trees, but they are also placed in fissures in the rocks wherever they may present a convenient site : the crevices of the white cliffs bordering the Murray, in South Australia, are annually resorted to for this purpose by thousands of this bird, and are said to be completely honeycombed by them. The eggs are two in number, of a pure white, rather pointed at the smaller end, one inch and seven lines long by one inch two and a half lines broad.

All the plumage white, with the exception of the elongated occipital crest, which is deep sulphur-yellow, and the ear-coverts, centre of the under surface of the wing, and the basal portion of the inner webs of the tail-feathers, which are

pale sulphur-yellow ; irides and bill black ; orbits white ; feet greyish brown.

Sp. 392. CACATUA LEADBEATERI.

LEADBEATER'S COCKATOO.

Plyctolophus leadbeateri, Vig. in Proc. of Comm. of Sci. and Corr. of Zool. Soc., part i. p. 61.

— *erythropterus*, Swains. Class. of Birds, vol. ii. p. 302.

Cacatua leadbeateri, Wagl. Mon. Psitt. in Abhand., p. 692.

Kakadoe crista tricolorata, Bourj. de St.-Hil. Perr., tab. 77.

Lophochroa leadbeateri, Bonap. Compt. Rend. de l'Acad. Sci., 1857, p. " "

Jak-kul-yak-kul, Aborigines of the mountain districts of Western Australia.

Pink Cockatoo, Colonists of Swan River.

Cacatua leadbeateri, Gould, Birds of Australia, fol., vol. v. pl. 2.

This beautiful species of Cockatoo enjoys a wide range over the southern portions of the Australian continent ; it never approaches very near the sea, but evinces a decided preference for the belts of lofty gums and scrubs clothing the sides of the rivers of the interior of the country ; it annually visits the Toodyay district of Western Australia, and breeds at Gawler, in South Australia. On reading the works of Sturt and Mitchell, I find that both those travellers met with it in the course of their explorations, particularly on the banks of the rivers Darling and Murray ; in fact, most of the interior districts between New South Wales and Adelaide are inhabited by it : but as yet no specimen has been received either from the north or north-west coasts.

It must be admitted that this species is the most beautiful and elegant of the genus yet discovered, and it will consequently ever be most highly prized for the cage and the aviary ; it appears to bear confinement as well as any of its congeners ; in disposition it is not so sprightly and animated, but it is

much less noisy, a circumstance tending to enhance rather than to decrease our partiality for it.

Few birds more enliven the monotonous hues of the Australian forests than this beautiful species, whose "pink-coloured wings and glowing crest," says Sir T. Mitchell, "might have embellished the air of a more voluptuous region."

Its note is more plaintive than that of *C. galerita*, and does not partake of the harsh grating sound peculiar to that species.

General plumage white; forehead, front and sides of the neck, centre of the under surface of the wing, middle of the abdomen, and the basal portion of the inner webs of the tail-feathers tinged with rose-colour, becoming of a rich salmon-colour under the wing; feathers of the occipital crest crimson at the base, with a yellow spot in the centre and white at the tip; bill light horn-colour; feet dark brown.

The sexes are nearly equal in size; but the female has the yellow spots in the centre of the crest more conspicuous and better defined than the male, whose crest, although larger, is not so diversified in colour as that of the female; on the other hand, the salmon tint of the under surface is much more intense in the male than in the female.

Sp. 393. *CACATUA SANGUINEA*, *Gould*.

BLOOD-STAINED COCKATOO.

Cacatua sanguinea, Gould in Proc. of Zool. Soc., part x. p. 138.

Eolophus sanguineus, Bonap. Compt. Rend. de l'Acad. Sci., 1857,
p. .

Cacatua sanguinea, Gould, *Birds of Australia*, fol., vol. v. pl. 3.

The circumstance of this species never having been characterized until I described it in the 'Proceedings of the Zoological Society,' above quoted, may doubtless be attributed to its being an inhabitant of the north-west coasts, portions

of the country where few collections have been formed. With the exception of a specimen brought home by Captain Chambers, R.N., and another in the collection of Mr. Bankier, my own specimens are all that I have ever seen; the whole of these were collected at Port Essington; but, as it was observed by Captain Sturt at the Dépôt, in Central Australia, we may infer that its range extends over all the intermediate country; and that no bird is more common on the Victoria is certain, for Mr. Elsey informed me he saw it there in flocks of millions.

The Blood-stained Cockatoo inhabits swamps and wet grassy meadows, and is often to be seen in company with its near ally, the *Cacatua galerita*, but I am informed it is even more shy and difficult of approach than that bird. It is doubtless attracted to the swampy districts by the various species of Orchidaceous plants that grow in such localities, upon the roots of which at some seasons it mainly subsists.

But little difference occurs either in the size or the colouring of the sexes, and I have young birds, which, although a third less in size, closely assimilate in every respect to the adult; so much so that an examination of the bill, which during immaturity is soft and yielding to the touch, is necessary to distinguish them.

General plumage white, with the exception of the basal portions, the feathers of the lores, and sides of the face, which are stained with patches of blood-red, and the base of the inner webs of the primaries, secondaries, and tail-feathers with fine sulphur-yellow; bill yellowish white; feet mealy brown.

Total length 15 inches; bill $1\frac{1}{8}$; wing $10\frac{3}{8}$; tail 6; tarsi $\frac{7}{8}$.

Other species of white Cockatoos nearly allied to this bird occur in the islands immediately to the northward of Australia, some of which extend their range to the Philippines.

Sp. 394. CACATUA ROSEICAPILLA.

ROSE-BREASTED COCKATOO.

Cacatua roseicapilla, Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 12.

—— *eos*, Less. Man. d'Orn., tom. ii. p. 143.

—— *rosea*, Vieill. Gal. des Ois., tom. ii. p. 5. pl. 25.

Psittacus eos, Kuhl. Nova Acta, tom. x. p. 88.

Rose-coloured Cockatoo, Lath. Gen. Hist., vol. ii. p. 207.

Pluctolophus eos, Vig. and Horsf. in Linn. Trans., vol. xv. p. 269.

Kakadoe rosea, Bourj. de St.-Hil. Perr., tab. 74.

Eolophus roseus, Bonap. Rev. et Mag. de Zool., 1854, p. 155.

—— *roseicapillus*, Bonap. Compt. Rend. de l'Acad. Sci., 1857, p. .

The Rose Cockatoo, Sturt's Travels in Australia, vol. ii. pl. in p. 79.

Cacatua eos, Gould, Birds of Australia, fol, vol. v. pl. 4.

This beautiful Cockatoo is abundantly dispersed over a great part of the interior of Australia; both Oxley and Sturt speak of it as inhabiting the country to the north-west of the Blue Mountains; in fact, few travellers have visited the interior without having had their attention attracted by its appearance; and I myself saw it in great numbers on the plains bordering the river Namoi, particularly under the Nundewar range of Sir Thomas Mitchell; I possess specimens also from the north coast, procured by the officers of the 'Beagle.' A difference, however, which may hereafter prove to be specific, exists between the birds from New South Wales and those of the north coast. Those from the latter locality are the largest in size, and have the bare skin round the eye more extended; the rosy colour of the breast and the grey colouring of the back are darker than in the specimens I killed on the Namoi. The late Mr. Elsey informed me that "The country round the Gulf seems to be the favourite resort of this species; it there feeds on the broad open plains in flocks of from fifty to two hundred. Nothing can exceed the beauty of their appearance as they wheel about over these plains in the light of an early sun."

The Rose-breasted Cockatoo possesses considerable power of wing, and frequently passes in flocks over the plains with a long sweeping flight, at one minute displaying their beautiful silvery grey backs, at the next by a simultaneous change of position bringing their rich rosy breasts into view, the effect of which is so beautiful that it is a source of regret to me that my readers cannot participate in the pleasure I have derived from the sight. I was informed by the natives of the Namoi that the bird had but recently arrived in the district, and they supposed it had migrated from the north. During the years 1839 and 1840 it bred in considerable numbers in the boles of the large *Eucalypti* skirting the Nundewar range, and afforded an abundant supply of young ones for the draymen and stock-keepers to transport to Sydney, where they were sold for a considerable sum to be shipped to England; and as the bird is very hardy, bears cold and confinement extremely well, and is perfectly contented in a cage, there are, perhaps, more of this species living in Europe at the present time than of any other member of the genus. In Australia I have seen it as tame as the ordinary denizens of the farm-yard, enjoying perfect liberty, and coming round the door to receive food in company with the pigeons and poultry, amongst which it mingled on terms of intimate friendship.

In a letter received from my friend Captain Sturt, he says, "The Rose-breasted Cockatoo is a bird of the low country entirely, and limited in the extent of its habitat, never being found in any great number on the banks of the Darling, or rising higher than 600 feet above the level of the sea. It feeds on *Salsolæ*, and occupies those vast plains which lie immediately to the westward of the Blue Mountains. It has a peculiar flight, and the whole flock turning together show the rose-colour of the under surface with pretty effect." I have not yet seen specimens of this bird from any part of the Swan River colony, neither did I observe it in any part

of South Australia that I visited ; the eastern and northern portions of Australia are evidently those most frequented by it.

The eggs, which are white, are generally three in number, about an inch and a half long by an inch and an eighth broad.

The sexes do not vary in colouring and scarcely in size, but individuals differ considerably in the depth of the tint of the under surface, some being much deeper than others, and in the extent of the bare space round the eye.

Crown of the head pale rosy white ; all the upper surface grey, deepening into brown at the extremity of the wings and tail, and becoming nearly white on the rump and upper tail-coverts ; sides of the neck, all the under surface from below the eyes and the under surface of the shoulder rich deep rosy red ; thighs and under tail-coverts grey ; irides rich deep rosy red ; orbits brick-red ; bill white ; feet mealy dark brown.

The young at first are covered with long, fine downy feathers, which at an early age give place to the colours which characterize the plumage of the adult.

Genus LICMETIS, *Wagler*.

The two species forming the genus *Licmetis* are not only confined to Australia, but, so far as we yet know, to the southern portions of that continent, one inhabiting the western and the other the eastern part of the country. Their singularly formed bill being admirably adapted for procuring their food on the ground, they are more terrestrial in their habits than the other members of the family.

They appear to be allied to the Nestors in form, but are more quiet and sedate in disposition ; and moreover differ from them in having longer wings and in their plumage being nearly uniform white.

Sp. 395. LICMETIS TENUIROSTRIS.

LONG-BILLED COCKATOO.

Psittacus nasicus, Temm. in Linn. Trans., vol. xiii. p. 115.

Long-nosed Cockatoo, Lath. Gen. Hist., vol. ii. p. 205.

Licmetis tenuirostris, Wagl. Mon. Psitt. in Abhand., vol. i. pp. 505 and 695.

Psittacus tenuirostris, Kuhl in Nov. Acta, tom. x. p. 88.

Cacatua nasica, Less. Traité d'Orn., p. 183.

Plyctolophus tenuirostris, Steph. Cont. of Shaw's Gen. Zool., vol. xiv. p. 108.

Kakadoe tenuirostris, Bourj. de St.-Hil. Perr., tab. 76.

The Red-vented Cockatoo, Brown's Ill., p. 10, pl. 5.

Licmetis nasicus, Gould, *Birds of Australia*, fol., vol. v. pl. 5.

The habitat of the present species would appear to be confined to Victoria and South Australia, where it inhabits the interior rather than the neighbourhood of the coast. Like the *Cacatua galerita*, it assembles in large flocks and spends much of its time on the ground, where it grubs up the roots of Orchids and other bulbous plants upon which it mainly subsists, and hence the necessity for its singularly formed bill. It not unfrequently invades the newly sown fields of corn, where it is the most destructive bird imaginable. It passes over the ground in a succession of hops, much more quickly than the *Cacatua galerita*; its powers of flight also exceed those of that bird, not perhaps in duration, but in the rapidity with which it passes through the air. I noticed this particularly when a flock passed me in the interior of South Australia. I have seen many individuals of this species in captivity, both in New South Wales and in this country; and although they appear to bear confinement equally well with the other members of the family, they seemed more dull and morose, and of a very irritable temper.

The eggs, which are white, two in number, and about the size of those of the *Cacatua galerita*, are usually deposited on

a layer of rotten wood at the bottom of holes in the larger gum-trees.

The sexes are alike in colour and size.

The general plumage white, washed with pale brimstone-yellow on the under surface of the wing, and with bright brimstone-yellow on the under surface of the tail; line across the forehead and lores scarlet; the feathers of the head, neck, and breast are also scarlet at the base, showing through the white, particularly on the breast; irides light brown; bill white; naked skin round the eye light blue; legs and feet dull olive-grey.

Sp. 396. LICMETIS PASTINATOR, *Gould*.

WESTERN LONG-BILLED COCKATOO.

Licmetis pastinator, Gould in Proc. of Zool. Soc., part viii. p. 175.

All ornithologists now admit that there are two species of the genus *Licmetis*; one inhabiting the western and the other the eastern portions of Australia. Living examples of both have been for some time in the Menagerie of the Zoological Society of London, where their differences are far more apparent than in the skins which have from time to time been sent to this country.

Lores scarlet; general plumage white; the base of the feathers of the head and front of the neck scarlet, showing through, and giving those parts a stained appearance; the basal half of the inner webs of the primaries, the inner webs of all the other feathers of the wing, and the inner webs of the tail-feathers beautiful brimstone-yellow; naked space round the eye greenish blue; irides light brown; bill white; feet dull olive grey.

Genus CALYPTORHYNCHUS, *Vig. and Horsf.*

The members of this genus are strictly arboreal, and are evidently formed to live upon the seeds of the *Banksiæ*,

Eucalypti, and other trees peculiar to the country they inhabit; but they diversify their food by occasionally devouring large caterpillars. They can scarcely be considered gregarious, but move about in small companies. Their flight is rather powerful, but at the same time laboured and heavy; and their voice is a low crying call, totally different from the harsh screaming notes of the *Cacatuæ*. Each division of the country, from the northern portions of the continent to Tasmania, is inhabited by its own peculiar species.

I have never seen a bird of this form from any other country than Australia, but I have heard that an extraordinary Parrot, said to be larger than any at present in our collections, inhabits New Guinea, and which, from the description given of it, will probably belong to this genus, or possibly to that of *Microglossum*. The *Calyptorhynchi* lay from two to four eggs in the holes of trees.

Sp. 397. CALYPTORHYNCHUS BANKSII.

BANKSIAN COCKATOO.

Psittacus banksii, Lath. Ind. Orn., vol. i. p. 107.

—— *magnificus*, Shaw, Nat. Misc., pl. 50.

—— (*Kakadoe*) *banksii*, Kuhl, Consp. Psitt., pp. 12, 90.

—— (*Banksianus*) *australis*, Less. Traité d'Orn., p. 180.

Plyctolophus banksii, Swains. Class. of Birds, vol. ii. p. 302.

Cacatua banksii, Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 8.

Calyptorhynchus banksii, Vig. and Horsf. in Linn. Trans., vol. xv. p. 271.

—— *banksii* et *stellatus*, Wagl. Mon. Psitt. in Abhand., tom. i. pp. 685, 686, pl. 27.

Calyptorhynchus Banksii, Gould, Birds of Australia, fol., vol. v. pl. 7.

I have abundant reasons for stating that every portion of Australia yet visited by Europeans is inhabited by members of the genus *Calyptorhynchus*, and that at least six species are now known, each of which has its own peculiar limits, whence it seldom or never passes. The present species is the one with

which ornithologists first became acquainted; it is a native of New South Wales and Victoria, out of which colonies I have never known it to occur, its range appearing to be limited by Moreton Bay on the east and Port Philip on the south. It is not unfrequently seen in the immediate neighbourhood of Sydney and other large towns, and it alike frequents the brushes and the more open wooded parts of the colony, where it feeds on the seeds of the *Banksiæ* and *Casuarinæ*, but occasionally changes its diet to caterpillars, particularly those that infest the wattles and other low trees. The facility with which it procures these large grubs is no less remarkable than the structure of the bird's bill, which is admirably adapted for scooping out the wood of both the larger and smaller branches, and by this means obtaining possession of the hidden treasure within.

The Banksian Cockatoo is a suspicious and shy bird, and a considerable degree of caution is required to approach it within gunshot; there are times, however, particularly when it is feeding, when this may be more readily accomplished. It never assembles in large flocks like the White Cockatoo, but moves about either in pairs or in small companies of from four to eight in number. Its flight is heavy, and the wings are moved with a flapping laboured motion; it seldom mounts high in the air, for although its flight is somewhat protracted, and journeys of several miles are performed, it rarely rises higher than is sufficient to surmount the tops of the lofty *Eucalypti*, a tribe of trees it often frequents, and in the larger kinds of which it almost invariably breeds, depositing its two or three white eggs in some inaccessible hole, spout, or dead limb, the only nest being the rotten wood at the bottom, or the chips made by the bird in forming an excavation.

The female and young birds of both sexes differ very considerably from the old male in the marking of their tails.

It is with feelings of great pleasure I find the term *Banksii*

was the first specific appellation assigned to this species. The name of the illustrious Banks will ever be retained as the distinctive designation of this noble and ornamental bird; and I would that it were in my power to write as many pages respecting its habits and economy as I have written lines; but this task must devolve upon some future historian of the productions of a country teeming with the highest interest, who will doubtless find occupation in investigating the minute details of that respecting which I am only able to give a general outline.

The male has the entire plumage glossy greenish black, with a broad band of rich deep vermilion across the middle of all but the two central tail-feathers, and the external web of the outer feather on each side; feet mealy brown; bill in young specimens greyish white, in old specimens black.

The female has the general plumage glossy greenish black, each feather of the head, sides of the neck, and wing-coverts pale yellow; under surface crossed by narrow irregular bars of pale yellow, becoming fainter on the abdomen; under tail-coverts crossed by narrow freckled bars of yellowish red; tail banded with red, passing into sulphur-yellow on the inner margins of the feathers, and interrupted by numerous narrow irregular bars and freckles of black.

Sp. 398. CALYPTORHYNCHUS MACRORHYNCHUS,
Gould.

GREAT-BILLED BLACK COCKATOO.

Calyptorhynchus macrorhynchus, Gould in Proc. of Zool. Soc., part x.
p. 138.

Lar-a-wuk, Natives of Taratong.

Calyptorhynchus macrorhynchus, Gould, *Birds of Australia*, fol.
vol. v. pl. 8.

All the examples of this species that have come under my notice have been collected at Port Essington, where it is

usually seen in small troops of from four to six in number. It has many characters in common with the Black Cockatoos of the south coast, but no species of the genus yet discovered has the bill so largely developed, which development is doubtless requisite to enable it to procure some peculiar kind of food at present unknown to us; it assimilates to the *C. banksii* of New South Wales in the lengthened form of its crest, but differs in having much shorter wings, and in the mandibles being fully one-third larger. The females of the two species also vary considerably in the colouring of the bands across the tail-feathers, which in the *C. banksii* is pure scarlet, while the same part of the female of the present bird is mingled yellow and scarlet. It differs from the *C. naso* of Western Australia in having a larger bill than that species, and in the much greater length of the crest.

The male has the whole of the plumage glossy bluish black; lateral tail-feathers, except the external web of the outer one, crossed by a broad band of fine scarlet; bill horn-colour; irides blackish brown; feet mealy blackish brown.

The female has the general plumage as in the male, but with the crest-feathers, those on the sides of the face and neck, and the wing-coverts spotted with light yellow; each feather of the under surface, but particularly the chest, crossed by several semicircular fasciæ of yellowish buff; lateral tail-feathers crossed on the under surface by numerous irregular bands of dull yellow, which are broad and freckled with black at the base of the tail, and become narrower and more irregular as they approach the tip; on the upper surface of the tail these bands are bright yellow at the base of the feathers, and gradually change into pale scarlet as they approach the tip; irides blackish brown.

Total length 22 inches; bill—length $1\frac{1}{2}$, depth 3; wing 16; tail 21; tarsi 1.

Sp. 399. CALYPTORHYNCHUS NASO, *Gould*.

WESTERN BLACK COCKATOO.

Calyptorhynchus naso, Gould in Proc. of Zool. Soc., part iv. p. 106.

Kar-rak, Aborigines of the mountain and lowland, and

Keer-jan-dee of the Aborigines of the northern districts of Western Australia.

Red-tailed Black Cockatoo of the Colonists of Swan River.

Calyptorhynchus naso, Gould, *Birds of Australia*, fol., vol. v. pl. 9.

The characters by which this species is distinguished from the *Calyptorhynchus macrorhynchus* are a smaller bill and a shorter and more rounded crest. The bill is moreover inclined to be gibbous, like that of *C. leachii*, to which species it also offers a further alliance in its shorter contour and more rounded crest and short tail.

The extent of range enjoyed by the *Calyptorhynchus naso* I have not been able to ascertain; it appears to be most numerous in the colony of Swan River, where it inhabits all parts of the country. As might be expected, its general economy closely resembles that of the other members of the genus. Except in the breeding-season, when it pairs, it may often be observed in companies of from six to fifteen in number.

It breeds in the holes of trees, where it deposits its snow-white eggs on the soft dead wood. They are generally placed in trees so difficult of access that even the natives dislike to climb them. Those given to Gilbert by the son of the colonial chaplain were taken by a native from a hole in a very high white gum, in the last week of October; they are white, one inch and eight lines long by one inch and four lines broad.

It flies slowly and heavily, and while on the wing utters a very harsh and grating cry, resembling the native name.

The stomach is membranous and capacious, and the food of those examined contained seeds of the *Eucalypti*, *Banksiæ*, &c.

The sexes differ considerably in the colour of the tail.

The male has the entire plumage glossy greenish black;

lateral tail-feathers, except the external web of the outer one, crossed by a broad band of fine scarlet; irides dark blackish brown; bill bluish lead-colour, feet brownish black, with a leaden tinge.

The female has the upper surface similar to, but not so rich as, that of the male, and has an irregularly shaped spot of yellowish white near the tip of each of the feathers of the head, crest, cheeks, and wing-coverts; the under surface brownish black, crossed by numerous narrow irregular bars of dull sulphur-yellow; the under tail-coverts crossed by several irregular bars of mingled yellow and dull scarlet; the lateral tail-feathers dull scarlet, crossed by numerous irregular bars of black, which are narrow at the base of the feathers and gradually increase in breadth towards the tip.

Total length 22 inches; bill in height $2\frac{3}{4}$; wing 14; tail $10\frac{1}{2}$; tarsi $\frac{5}{8}$.

Sp. 400. CALYPTORHYNCHUS LEACHII.

LEACH'S COCKATOO.

Psittacus leachii, Kuhl, Consp. Psitt. in Nova Acta, vol. x. p. 91, pl. 3.

—— *temminckii*, Kuhl, Ib., vol. x. p. 89.

—— *solandrii*, Temm. Ib., vol. xiii. p. 113.

Cacatua viridis, Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 13.

Calyptorhynchus cookii, Vig. and Horsf. in Linn. Trans., vol. xv. p. 272.

—— *solandri*, Vig. and Horsf. Ib., vol. xv. p. 274.

—— *leachii*, Wagl. Mon. Psit. in Abhand., vol. i. p. 683.

—— *temminckii*, Wagl, Ib., vol. i. p. 684.

—— *stellatus*, Selb. in Nat. Lib. Orn., vol. vi. Parrots, p. 134, pl. 15.

Banksianus australis, Less. Traité d'Orn., p. 180, Atlas, pl. 18. fig. 2, female.

Ptyctolophus solandri et cookii, Swains. Class. of Birds, vol. ii. p. 302.

Carat, Aborigines of New South Wales.

Calyptorhynchus leachii, Gould, Birds of Australia, fol., vol. v. pl. 10.

The *Calyptorhynchus leachii* is the least species of the

genus yet discovered, and, independently of its smaller size, it may be distinguished from its congeners by the more swollen and gibbous form of its bill. Its native habitat is New South Wales, Victoria, and South Australia. I obtained specimens on the Lower Namoi, more than three hundred miles in the interior; and the cedar-brushes of the Liverpool range, Mr. Charles Throsby's park at Bong-bong, and the sides of the creeks of the Upper Hunter, were also among the places in which I killed it. So invariably did I find it among the *Casuarinæ*, that those trees appear to be as essential to its existence as the *Banksiæ* are to that of some species of Honey-eater; the crops of those I killed were invariably filled with the seeds of the trees in question. Its disposition is less shy and distrusting than those of the *Calyptorhynchi banksii* and *funereus*, but little stratagem being required to get within gunshot; when one is killed or wounded, the rest of the flock either fly around or perch on the neighbouring trees, and every one may be procured. It has the feeble whining call of the other members of the genus. Its flight is laboured and heavy; but when it is necessary for it to pass to a distant part of the country, it mounts high in the air and sustains a flight of many miles.

It is not unusual to find individuals of this species with yellow feathers on the cheeks and other parts of the head; this variation I am unable to account for; it is evidently subject to no law, as it frequently happens that six or eight may be seen together without one of them exhibiting this mark, while on the contrary a like number may be encountered with two or three of them thus distinguished. To this circumstance, and to the variation in the colouring of the tail-feathers of the two sexes, may be attributed the voluminous list of synonyms pertaining to this species.

There is no doubt that Mr. Caley was right in the opinion expressed in his notes that this is the *Carat* of the natives; and he adds that it lays two eggs in the holes of the trees;

“ does not cut off the branches of trees like the *C. funereus*, but cuts off *May-rybor-ro* and *Mun-mow* (the fruit of two species of *Persoonia*), without however eating them, before they are ripe, to the great injury and vexation of the natives.”

The adult male may at all times be distinguished from the female by the broad band of scarlet on the tail. The females and males during the first year have this part banded with black.

The old male has the entire plumage glossy greenish black, washed with brown on the head and neck, with a broad band of deep vermilion across the middle of all but the two centre tail-feathers, and the external web of the outer feather on each side; irides very dark brown; orbits mealy black in some, in others pinky; bill dark horn-colour; feet mealy black.

The females and young males differ in having the head and neck browner than in the adult male, and in having the scarlet band on the tail crossed by narrow bands of greenish black.

Sp. 401. CALYPTORHYNCHUS FUNEREUS.

FUNERAL COCKATOO.

Psittacus funereus, Shaw, Nat. Misc., pl. 186.

Funereal Cockatoo, Lath. Gen. Hist., vol. ii. p. 202.

Calyptorhynchus funereus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 271.

Plyctolophus funeralis, Swains. Class. of Birds, vol. ii. p. 302.

Cacatua banksii, p., Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 9.

Psittacus (Banksianus) australis, p., Less. Traité d'Orn., p. 180.

—— (*Kakadoe*) *funereus*, Kuhl, Consp. Psitt., pp. 12, 89.

Wy-la, Aborigines of the Upper Hunter in New South Wales.

Calyptorhynchus funereus, Gould, Birds of Australia, fol., vol. v. pl. 11.

Although not the most powerful in its mandibles, the present bird is the largest species of the genus to which it

belongs, its great wings and expansive tail being unequalled in size by those of any other member of the great family of *Psittacidae* yet discovered. The true habitat of the *Calyptorhynchus funereus* is New South Wales, or that portion of the Australian continent forming its south-eastern division. Among other places, I observed it in the neighbourhood of Sydney, at Bong-bong, on Mosquito Island, near the mouth of the river Hunter, and on the Liverpool range; and it may be said to be universally distributed over this part of the continent. The thick brushes clothing the mountain sides and bordering the coast-line, the trees of the plains, and the more open country are equally frequented by it; at the same time it is nowhere very numerous, but is usually met with associated in small companies of from four to eight in number, except during the breeding-season, when it is only to be seen in pairs. Its food is much varied; sometimes the great belts of Banksias are visited, and the seed-covers torn open for the sake of their contents; while at others it searches with avidity for the larvæ of the large caterpillars which are deposited in the wattles and gums. Its flight, as might be expected, is very heavy, flapping, and laboured, but it sometimes dives about between the trees in a most rapid and extraordinary manner.

When busily engaged in scooping off the bark in search of its insect food, it may be approached very closely; and if one be shot, the remainder of the company will fly round for a short distance and perch on the neighbouring trees, until the whole are brought down, if you are desirous of so doing.

Its note is very singular—a kind of whining call, which it is impossible to describe, but which somewhat resembles the syllables *Wy-la*, whence the native name.

The eggs, which are white and two in number, about one inch and five-eighths long by one inch and three-eighths broad, are deposited on the rotten wood in the hollow branch of a large gum.

Caley mentions that this bird has a habit of cutting off the smaller branches of the apple-trees (*Angophoræ*), apparently from no other than a mischievous motive.

The sexes are very nearly alike, and may be thus described:—

The general plumage brownish black, glossed with green, particularly on the head; feathers of the body, both above and beneath, narrowly margined with brown; ear-coverts dull wax-yellow; all but the two central tail-feathers crossed in the centre by a broad band, equal to half their length, of brimstone-yellow, thickly freckled with irregular zigzag markings of brownish black; the external web of the outer primary on each side, and the margin of the external web of the other banded feathers, brownish black; bill black in some and white in others, the latter being probably young birds; eyes blackish brown; feet mealy blackish brown; orbits in some black, in others pinkish red, and in others whitish.

402. CALYPTORHYNCHUS XANTHONOTUS, *Gould*.

YELLOW-EARED BLACK COCKATOO.

Calyptorhynchus xanthonotus, Gould in Proc. of Zool. Soc., part v. p. 151.

Calyptorhynchus xanthonotus, Gould, *Birds of Australia*, fol. vol. v. pl. 12.

The principal habitat of this species is Tasmania, but I have also seen specimens from Flinder's Island and Port Lincoln in South Australia. It is very plentifully dispersed over all parts of Tasmania, where it evinces a preference for the thickly wooded and mountainous districts; and is always to be observed in the gulleys under Mount Wellington, particularly in the neighbourhood of New Town. In fine weather it takes a higher range, but descends to the lower part of the country on the approach of rain, when it becomes excessively noisy, and utters as it flies a very peculiar whining cry. Its flight is

heavy and laboured, and while on the wing it presents a very remarkable appearance, its short neck, rounded head, and long wings and tail giving it a very singular contour. It is generally to be observed in companies of from four to ten in number, but occasionally in pairs only. I found it very shy and difficult of approach, which may perhaps be attributed to its being wantonly shot wherever it may be met with.

Its principal food is a large kind of caterpillar, which it obtains from the wattle- and gum-trees, and in procuring which it displays the greatest activity and perseverance, scooping off the bark and cutting through the thickest branch until it arrives at the object of its search; it is in fact surprising to see what enormous excavations it makes in the larger branches, and how expertly it cuts across the smaller ones: besides these large caterpillars, it also feeds upon the larvæ of several kinds of coleopterous insects, and occasionally on the seeds of the Banksias and berries; chrysalides were also found in the stomachs of some that were dissected.

I found it exceedingly difficult to obtain any particulars respecting the nidification of this bird, in consequence of its resorting for the performance of this duty to the most retired and inaccessible parts of the forests. Lieut. Breton, R.N., having informed me that a pair were breeding in a tree on the estate of Mr. Wettenhall, I requested him to use his influence with that gentleman to have their eggs procured for me; and on the 2nd of February 1839, I received a note from him, in which he says:—

“ In compliance with your request, I wrote to Mr. Wettenhall upon the subject of the Black Cockatoo's nest, and he forthwith directed his shepherd to fell the tree in which the bird had established itself. It was situated in a gulley or bottom, and was about four feet and a half in diameter. The hole was from ninety to one hundred feet from the ground, two feet in depth, and made quite smooth, the heart of the tree being decayed. There was no appearance whatever of a

nest. The tree was broken in pieces by the fall, and the contents of the hole or nest destroyed; the fragments, however, were sought for with the greatest care, and all that could be found are sent you. It may perhaps be as well to state, that both while the tree was being felled and for a short time afterwards, a Hawk kept attacking the Cockatoo, which flew in circles round the tree before it fell, uttering its loudest and most mournful notes, and at times turning upon the Hawk, until at length it flew off."

Mr. G. French Angas informs me that this bird "lays two white eggs in some large rotten gum-tree, generally where one of the large branches has rotted off at the fork; inside this hole, which occasionally extends five or six feet down the bole of the tree, the bird scrapes and clears away some of the rotten wood until a sort of seat is formed; for it is a very rude attempt at making a nest. The laying commences about the latter end of October or beginning of November. The bird, which at other times is very shy and wild, now becomes very tame; and I have known an old bird to perch herself quietly close to me while I have been examining the hole beneath which contained her eggs. When the young are hatched, both the old birds go to the adjacent grounds for a supply of food, which generally consists of the seeds of some leguminous plant, and having filled their crops and throats, they both return, when one of them commences feeding one young one, and the other attends to and feeds the second. The young birds eat an immense quantity of seeds, and are very soon able to leave the nest; but the old ones continue to feed them for some time longer. They utter a very peculiar low, continued, plaintive, screeching cry when hungry. As the old birds disgorge the food and push it into the mouth of the young they make a very curious noise, sounding like '*chucka, chucka, chucka,*' rapidly repeated."

The eggs are one inch and eight lines long by one inch and four lines broad.

The bird varies considerably in size and weight, some specimens weighing as much as one pound and ten ounces, while others weighed no more than one pound and three ounces.

The sexes differ but little from each other. I believe the birds with white bills to be immature.

Crown of the head, cheeks, throat, upper and under surface brownish black; feathers of the breast obscurely tipped with dull olive; ear-coverts yellow; two centre tail-feathers deep blackish brown, the remainder black at the base and tips, the central portion being in some specimens uniform light lemon-yellow, and in others the same colour blotched with spots and markings of brown; bill in some specimens white, in others blackish brown; feet greyish brown; orbits in some black, in others pink; irides nearly black.

Total length 24 inches; wing $14\frac{1}{2}$; tail 12; tarsi 1.

Sp. 403. CALYPTORHYNCHUS BAUDINII, *Vig.*

BAUDIN'S COCKATOO.

Calyptorhynchus baudinii, Vig. in Lear's Ill. Psitt., pl. 6.

Plyctolophus ? *baudinii*, Swains. Class. of Birds, vol. ii. p. 302.

Oo-lāak of the Aborigines of the lowland, and

Ngol-yē-nuk of the Aborigines of the mountain districts of Western Australia.

White-tailed Black Cockatoo of the Colonists.

Calyptoryhynchus baudinii, Gould, Birds of Australia, fol., vol. v. pl. 13.

This species, which is a native of Western Australia, is distinguished from all the other known members of the group by its smaller size and by the white markings of its tail-feathers. It belongs to that section of the Black Cockatoos in which a similarity of marking characterizes both sexes, such as *Calyptorhynchus funereus* and *C. xanthonotus*. Like the other members of the genus it frequents the large forests of *Eucalypti* and the belts of *Banksiæ*, upon the seeds of

which it mainly subsists ; occasionally it seeks its food on the ground, when insects, fallen seeds, &c. are equally partaken of ; the larvæ of moths and other insects are also extracted by it from the trunks and limbs of such trees as are infested by them.

Its flight is heavy and apparently laboured : when on the wing it frequently utters a note very similar to its aboriginal name ; at other times when perched on the trees it emits a harsh croaking sound, which is kept up all the time the bird is feeding.

It breeds in the holes of the highest white gum-trees, often in the most dense and retired part of the forest. The eggs are generally two in number, of a pure white ; their average length being one inch and three-quarters by one inch and three-eighths in breadth. The breeding-season extends over the months of October, November, and December.

I have never seen specimens from any other part of Australia than the colony of Swan River, over the whole of which it seems to be equally distributed.

The entire plumage is blackish brown, glossed with green, especially on the forehead ; all the feathers narrowly tipped with dull white ; ear-coverts creamy white ; all but the two central tail-feathers crossed by a broad band, equal to half their length, of cream-white ; the external web of the outer primary and the margin of the external web of the other banded feathers blackish brown ; the shafts black ; irides blackish brown ; bill lead-colour ; in some specimens the upper mandible is blackish brown ; legs and feet dull yellowish grey, tinged with olive.

Genus MICROGLOSSUM, *Geoffroy*.

The species of this genus are among the largest members of the great family of Parrots ; they are also rendered conspicuously different from the whole of their congeners by their

extraordinarily developed bills and their lengthened lanceolate crest-feathers. Two species are all that are known, one of which is Australian.

Sp. 404. MICROGLOSSUM ATERRIMUM.

GREAT PALM COCKATOO.

Great Black Cockatoo, Edw. Glean., pl. 316.

Psittacus aterrimus, Gmel. Edit. Linn. Syst. Nat., vol. i. p. 330.

—— *gigas*, Lath. Ind. Orn., vol. i. p. 107.

—— *griseus*, Bechst.

—— *goliath*, Kuhl, Consp. Psitt. in Nov. Acta, vol. x. p. 92.

Cacatua aterrima, Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 13.

Microglossus aterrimus, Wagl. Mon. Psitt. in Abhand., vol. i. p. 682.

—— ——— et *griseus*, Swains. Classif. of Birds, vol. ii. p. 302.

Microglossum aterrimum, Gray and Mitch. Gen. of Birds, vol. ii. p. 424.

—— *ater*, Less. Traité d'Orn., p. 184, Atlas, pl. 19. fig. 1 et A.

Psittacus (Probosciger) aterrimus, Kuhl, Consp. Psitt. in Nov. Acta, pp. 12, 91.

—— (——) *goliath*, Kuhl, Ib., pp. 9, 94.

Solenoglossus zeylanicus, Ranz. Elem. d'Orn., tom. ii. p. 21.

Psittacus (Cacatua) goliath, Müll. et Schleg.

Payäntoo, Goodang Tribe of the Aborigines at Cape York.

Microglossus aterrimus, Gould, Birds of Australia, fol. Supplement, pl.

As might have been expected, the fauna of the Cape York district is found to comprise many species common to the islands immediately to the northward of that part of the country; among which the present noble bird must now be enumerated. Although not new to science, no one of the accessions obtained during the expedition of H.M.S. Rattlesnake is of greater interest than the *Microglossum aterrimum*, adding, as it does, another to the rich series of the *Psittacidae* previously described as pertaining to the ornithology of Australia.

I have much pleasure in communicating the following interesting notes on this species by Mr. Macgillivray:—

“This very fine bird, which is not uncommon in the vicinity of Cape York, was usually found in the densest scrub among the tops of the tallest trees, but was occasionally seen in the open forest land perched on the largest of the *Eucalypti*, apparently resting on its passage from one belt of trees or patch of scrub to another: like the *Calyptorhynchi*, it flies slowly, and usually but a short distance. In November 1849, the period of our last visit to Cape York, it was always found in pairs, very shy, and difficult of approach. Its cry is merely a low short whistle of a single note, which may be represented by the letters ‘*Hweet-hweet*.’ The stomach of the first one killed contained a few small pieces of quartz and triturated fragments of palm cabbage, with which the crop of another specimen was completely filled; and the idea immediately suggests itself, that the powerful bill of this bird is a most fitting instrument for stripping off the leaves near the summits of the *Seaforthia elegans* and other palms to enable it to arrive at the central tender shoot.”

Lores deep velvety black; lengthened crest-feathers greyish black; the remainder of the plumage black, with purple reflexions; irides purplish brown; cheeks pale dull crimson, bordered with pale yellow, the two colours gradually blending into each other; bill and feet purplish black.

In the young male the tip of the upper and the whole of the lower mandible is horn-colour, and the under surface is brownish black, with narrow obscure crescentic marks of yellowish white at the tips of the abdominal feathers.

Genus CALLOCEPHALON, *Lesson*.

Of this form the only species known is a very remarkable bird, and is doubtless adapted for some particular mode of existence; being short and thickset, and furnished with a very powerful bill. The sexes are alike in colour, except in the hue of their long filamentous crest, which is scarlet in the male and grey in the female.

Sp. 405. CALLOCEPHALON GALEATUM.

GANG-GANG COCKATOO.

Psittacus galeatus, Lath. Ind. Orn., Supp. p. xxiii.

—— *fimbriatus*, Grant.

Red-crowned Parrot, Lath. Gen. Syn., Supp. vol. ii. p. 369, pl. 140.

Calyptrorhynchus galeatus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 274.

Corydon galeatus, Wagl. Mon. Psitt. in Abhand., vol. i. pp. 504, 690.

Plyctolophus galeatus, Swains. Class. of Birds, vol. ii. p. 302.

Banksianus galeatus, Less. Traité d'Orn., p. 181.

Callocephalon australe, Less. Zool. Voy. of Thetis, pls. 47, 48.

—— *galeatum*, G. R. Gray, List of Gen. of Birds, 2nd edit., p. 68.

Cacatua galeata, Vieill. Nouv. Dict. d'Hist. Nat., tom. xvii. p. 12.

Psittacus phaenicocephalus, Mus. de Paris.

—— (*Banksianus*) *galeatus*, Less. Traité d'Orn., p. 181.

Kakadoe rubro-galeatus, Bourj. de St.-Hil. Perr., tabs. 75, 75a, 75b.

Gang-gang Cockatoo, Colonists of New South Wales.

Callocephalon galeatum, Gould, Birds of Australia, fol., vol. v. pl. 14.

The only information I can give respecting this fine species is that it is a native of the forests bordering the south coast of Australia, some of the larger islands in Bass's Straits, and the northern parts of Tasmania, and that it frequents the most lofty trees, and feeds on the seeds of the various *Eucalypti*. A few instances have occurred of its being brought to England alive, where it has borne captivity quite as well as the other members of the great family to which it belongs. While this Handbook was passing through the press, individuals of this species graced the Menagerie of the Zoological Society of London, and I trust this fact may induce some of our Australian friends to send others, for no birds would be more highly prized. This species being closely allied to the Black Cockatoos (*Calyptrorhynchi*) we may reasonably infer that these latter birds would thrive equally well, were

the experiment more extensively made, their form and habits being very similar.

The paucity of information here given will I trust be a sufficient hint to those who may be favourably situated for observing the habits of this species, that by transmitting an account of the number of its eggs or other particulars respecting it either to myself or to any scientific journal, they would be promoting the cause of science, and adding to the stock of ornithological knowledge.

The sexes are readily distinguished by the marked difference in their plumage; both are crested, but the crest of the male is a rich scarlet, while that of the female is grey.

The male has the forehead, crest, and cheeks fine scarlet, the remainder of the plumage dark slate-grey; all the feathers, with the exception of the primaries, secondaries, and tail, narrowly margined with greyish white—decided and distinct on the upper, but much fainter on the under surface; irides blackish brown; bill light horn-colour; feet mealy black.

The general plumage of the female is dark slate-colour, the feathers of the neck and back slightly margined with pale grey, the remainder of the upper surface crossed with irregular bars of greyish white; the wings have also a sulphurous hue, as if powdered with sulphur; the feathers of the under surface are margined with sulphur-yellow and dull red, changing into dull yellow on the under tail-coverts.

Genus POLYTELIS, *Wagler*.

This genus comprises three species, all of which are peculiar to the southern portions of Australia. In their lengthened form they resemble in appearance the *Palæorni* of India; but they differ from them considerably in structure, and form a very isolated genus among the *Psittacidae*.

The sexes are very different in colour; the male being by far the finest; both, however, are adorned with lengthened and elegantly formed tails.

Sp. 406. POLYTELIS BARRABANDI.

BARRABAND'S PARRAKEET.

Psittacus barrabandii, Swains. Zool. Ill., 1st ser. pl. 59.

Palæornis barrabandi, Vig. in Zool. Journ., vol. ii. p. 56.

Polytelis barrabandi, Wagl. Mon. Psitt. in Abhand., pp. 489 and 519.

Scarlet-breasted Parrot, Lath. Gen. Syn., vol. ii. p. 121.

Palæornis ? rosaceus, Vig. in Zool. Journ., vol. v. p. 274; female.

Platycercus barrabandi, Vig. and Horsf. in Linn. Trans., vol. xv. p. 287.

Barrabandius rosaceus, Bonap. Consp. Gen. Av., tom. i. p. 2, *Barra-bandius*, sp. 1.

Psittacus swainsoni, Desm.

Platycercus rosaceus, G. R. Gray List. of Spec. of Birds in Brit. Mus., part iii. sec. ii., *Psittacidae*, p. 9.

Psittacus sagittifer barrabandi et rosaceus, Bourj. de St.-Hil. Supp. to Le Vaill. Hist. Nat. des Perr., pls. 4 et 6.

Green-leek of the Colonists of New South Wales.

Polytelis barrabandi, Gould, Birds of Australia, fol., vol. v. pl. 15.

In the great family of Parrots, few species are more elegant in form or more exquisitely coloured than the present, which is a native of the interior of New South Wales, and Victoria. Living individuals are frequently brought down to Sydney by the draymen of the Argyle county, where it appears to be a common species. When we know more of its history I expect it will be found to inhabit similar localities, and enjoy a similar range to the *P. melanura*, and that the two species as closely assimilate in their habits and economy as they do in form. It is somewhat singular, that the females of this and the succeeding bird should have been described by the late Mr. Vigors as distinct species from the males.

From the length of its wings and the general contour of its body, we may be assured that its power of flight is very great, and that it doubtless removes from one part of the continent to another whenever nature prompts it so to do.

The female, though equally as graceful in form as the male, is nevertheless much inferior to him in the colouring of her

plumage ; the green of the wings and body being less brilliant, and the rich hues of the crown and cheeks being entirely wanting ; a similar kind of plumage also characterizes the male during the first year.

The male has the forehead, cheeks and throat rich gamboge-yellow ; immediately beneath the yellow of the throat a crescent of scarlet ; back of the head, all the upper and under surface grass-green ; primaries, secondaries, spurious wing and tail dark blue tinged with green ; thighs in some scarlet, in others grass-green ; irides orange-yellow ; bill rich red ; feet brown.

The female has the face dull greenish blue ; chest dull rose-colour ; thighs scarlet ; the remainder of the body grass-green ; primaries bluish green ; central tail-feathers uniform green, the remainder bluish green, with the inner webs for their entire length fine rosy red ; irides brown ; bill pale reddish orange ; feet dark brown.

Sp. 407. POLYTELIS ALEXANDRÆ, *Gould*.

THE PRINCESS OF WALES' PARRAKEET.

Polytelis alexandræ, Gould in Proc. of Zool. Soc., 1863, p. 232.

I feel assured that the discovery of an additional species of the lovely genus *Polytelis* will be hailed with pleasure by all ornithologists, and that they will assent to its bearing the specific name of *alexandræ*, in honour of that Princess who, we may reasonably hope, is destined at some future time to be the Queen of these realms and their dependencies, of which Australia is by no means the most inconspicuous.

The *Polytelis alexandræ* is in every respect a typical *Polytelis*, having the delicate bill and elegantly striped tail characteristic of that form. It is of the same size as *P. barrabandi*, but differs from that species in having the crown blue and the lower part of the cheeks rose-pink instead of yellow.

For my knowledge of this new species I am indebted to the

Board of Governors of the South Australian Institute, who liberally forwarded for my inspection a selection from the ornithological collection made by Mr. Frederick G. Waterhouse during Mr. Stuart's late Exploratory Expedition into Central Australia. The locality on the label attached to the specimens is Howell's Ponds, Central Australia, 16° 54' 7" S.

Forehead delicate light blue ; lower part of the cheeks, chin, and throat rose-pink ; head, nape, mantle, back, and scapularies olive-green ; lower part of the back and rump blue ; shoulders and wing-coverts pale yellowish green ; external webs of the principal primaries dull blue ; breast and abdomen olive-grey ; thighs rosy red ; upper tail-coverts olive, tinged with blue ; two centre tail-feathers bluish olive green ; the two next on each side olive-green on their outer webs and dark brown on the inner ones ; the remaining tail-feathers tricoloured, the central portion being black, the outer olive-grey, and the inner deep rosy red ; bill coral-red ; feet mealy brown.

Total length 14 inches ; bill $\frac{1}{2}$; wing 7 ; tail 9 ; tarsi $\frac{7}{8}$.

Sp. 408. **POLYTELIS MELANURA.**

BLACK-TAILED PARRAKEET.

Palæornis melanura, Vig. in Lear's Ill. Psitt., pl. 28, male.

—— *anthopeplus*, Vig. in Ib., pl. 29, female.

Polytelis melanura, Gould in Syn. Birds of Australia, Part IV.

Psittacus Sagittifer melanura et *anthopeplus*, Bourj. de St-Hil. Perr., tab. 5 et 7.

Platycercus melanurus, G. R. Gray, Gen of Birds, vol. ii. p. 408.

Barrabandius melanurus, Bonap. Consp. Gen. Av., tom. i. p. 2, *Barra bandius*, sp. 2.

Wouk-un-ga, Aborigines of Western Australia.

Jul-u-up, Aborigines of King George's Sound.

Mountain Parrot, Colonists of Western Australia.

Polytelis melanura, Gould, Birds of Australia, fol., vol. v. pl. 16.

So little is known of the habits and economy of this beau-

tiful Parakeet, which has hitherto only been found on the southern portion of the continent of Australia, that the present paper must necessarily be brief. It is strictly an inhabitant of the interior, over which it doubtless enjoys a wide range. Sir George Grey procured it in the dense scrub to the north-west of Adelaide, and Gilbert encountered it in the white-gum forests of the Swan River settlement. Captain Sturt at page 188 of the second volume of the narrative of his journeys into the interior, says, "I believe I have already mentioned that, shortly after we first entered the Murray, flocks of a new Paroquet passed over our heads, apparently emigrating to the N.W. They always kept too high to be fired at, but on our return, hereabouts, we succeeded in killing one. It made a good addition to our scanty stock of objects of natural history."

Gilbert remarks that, in Western Australia, it is met with in small families of from nine to twelve in number, feeding on seeds, buds of flowers and honey gathered from the white gum-tree. Its flight, as indicated by its form, is rapid in the extreme.

The male has the head, neck, shoulders, rump, and all the under surface beautiful jonquil-yellow; upper part of the back and scapularies olive; primaries and tail deep blue; several of the greater wing-coverts dull scarlet, forming a conspicuous mark on the centre of the wing; irides bright red; bill scarlet; feet ash-grey.

The female has the head, sides of the face, back of the neck, upper part of the back and scapulars dull olive-green; throat, all the under surface, rump and wing-coverts yellowish green, the latter passing into deep green on the centre of the shoulder; primaries, some of the secondaries, and spurious wing deep blue-black, margined externally with yellowish green; the remainder of the secondaries and a few of the greater coverts deep red; two centre tail-feathers deep green, the remainder green at the base, passing into black on the

inner webs ; the five lateral feathers on each side margined on their inner webs and tipped with rosy red, which is broadest and most conspicuous on the two outer feathers ; bill scarlet ; feet ash-grey.

Genus APROSMICTUS, *Gould*.

One species only of this form inhabits Australia ; others are found in New Guinea and the neighbouring islands. They are distinguished from the *Platycerci* by the possession of a well-developed *os furcatorium*, a bone which is entirely wanting in the members of that genus ; in their habits the *Aprosmicti* are mainly arboreal, and in their disposition morose and sullen.

Sp. 409. APROSMICTUS SCAPULATUS.

KING LORY.

Psittacus scapulatus, Bechst., Kuhl, Nova Acta, p. 56.

Psittacus tabuensis, var. β , Lath. Ind. Orn., p. 88.

La Grande Perruche à collier et croupion bleu, Le Vaill. Hist. des Perr., pls. 55 and 56.

Tabuan Parrot, White's Journ., pl. in p. 168, male, and p. 169, female.

Platycercus scapulatus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 284.

Psittacus cyanopygius, Vieill., 2nde édit. du Nouv. Dict. d'Hist. Nat., tom. xxv. p. 339.

Scarlet and Green Parrot, Lath. Gen. Hist., vol. ii. p. 116.

Platycercus scapularis, Swains. Zool. Ill., 2nd Ser. pl. 26.

Aprosmictus scapulatus, Gould in Proc. of Zool. Soc., part x. p. 112.

Wellat, Aborigines of New South Wales.

Aprosmictus scapulatus, Gould, Birds of Australia, fol., vol. v. pl. 17.

This very showy and noble species appears to be extremely local in its habitat ; I have not seen it from any other portion of Australia than New South Wales, in which country it appears to be almost exclusively confined to the brushes, par-

ticularly such as are low and humid, and where the large *Casuarinæ* grow in the greatest profusion. All the brushes stretching along the southern and eastern coast appear to be equally favoured with its presence, as it there finds a plentiful supply of food, consisting of seeds and berries. At the period when the Indian corn is becoming ripe it leaves its umbrageous abode and sallies forth in vast flocks, which commit great devastation on the ripening grain. It is rather a dull and inactive species compared with the members of the restricted genus *Platycercus*; it flies much more heavily, and is very different in its disposition, for although it soon becomes habituated to confinement, it is less easily tamed and much less confiding and familiar; the great beauty of the male, however, somewhat compensates for this unpleasant trait, and consequently it is highly prized as a cage-bird.

I was never so fortunate as to find the eggs of this species, neither could I gather any information respecting this part of the bird's economy; and I am inclined to look with suspicion on the account of its breeding given by Mr. Caley in the Linnean Transactions: in my opinion it must have reference to some other bird.

When fully adult the sexes differ very considerably in the colouring of the plumage, as will be seen by the following descriptions.

The male has the head, neck and all the under surface scarlet; back and wings green, the inner webs of the primaries and secondaries being black; along the scapularies a broad line of pale verdigris green; a line bounding the scarlet at the back of the neck, the rump and upper tail-coverts rich deep blue; tail black; pupil large and black; irides narrow and yellow; bill scarlet; legs mealy brown.

The female has the head and all the upper surface green; throat and chest green tinged with red; abdomen and under tail-coverts scarlet; rump dull blue; two centre tail-feathers green; the remainder green, passing into bluish black; and

with a rose-coloured spot at the extremity on the under surface.

The young male for the first two years resembles the female, which is doubtless the cause why so few birds are seen in the bright red dress, compared with those having a green head and chest.

Genus PTISTES, Gould.

The birds for which I propose the above generic appellation are, in my opinion, sufficiently different in form and colouring to warrant their being separated from *Aprosmictus*, and formed into a new genus. At present three species are known to me, two of which are Australian; the third is the *Ptistes vulneratus*, figured in the voyage of the Astrolabe as *Psittacus erythropterus*, and said to be from Timor. They have a very laboured flight, consequent on the great size of their wings, which has suggested the generic name of *Ptistes*, i. e. winnower.

Sp. 410. PTISTES ERYTHROPTERUS.

RED-WINGED LORY.

Psittacus erythropterus, Gmel. Syst., vol. i. p. 343.

—— *melanotus*, Shaw, Nat. Misc., pl. 653.

Crimson-winged Parrot, Lath. Gen. Syn., vol. i. p. 299; and Supp., p. 60.

Platycercus erythropterus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 284.

Aprosmictus erythropterus, Gould in Proc. of Zool. Soc., part x. p. 112.

Aprosmictus erythropterus, Gould, Birds of Australia, fol., vol. v. pl. 18.

The extensive belts of *Acacia pendula* which diversify the plains of the eastern portion of Australia are tenanted by this bird, either in small companies of six or eight, or in flocks of a much greater number. It is beyond my power to describe the extreme beauty of the appearance of the Red-winged Lory

when seen among the silvery branches of the *Acacia*, particularly when the flocks comprise a large number of adult males, the gorgeous scarlet of whose shoulders offers so striking a contrast to the surrounding objects. It is rather thinly dispersed among the trees skirting the rivers which intersect the Liverpool Plains, but from these towards the interior it increases in number. Being naturally shy and wary, it is much more difficult of approach than the generality of the Parrakeets: and it seldom becomes tame or familiar in captivity.

Its flight is performed with a motion of the wings totally different from that of any other member of the great family of *Psittacidæ* I have seen, and has frequently reminded me of the heavy flapping manner of the Pewit, except that the motion was even slower and more laboured. While on the wing, it frequently utters a loud screeching cry.

Its food consists of berries, the fruit of a species of *Loranthus*, and the pollen of flowers, to which is added a species of scaly bug-like insect, that infests the branches of its favourite trees; and in all probability small caterpillars, for I have found them in the crops of several of the *Platycerci*. It breeds in the holes of the large *Eucalypti* growing on the banks of rivers; the eggs, which are white, being four or five in number, about an inch and an eighth long by seven-eighths broad.

The sexes differ very considerably in the colouring of their plumage; and the young males during the first two years resemble the female.

The male has the head and back of the neck verditer green; throat, all the upper surface, edge of the shoulder, and upper tail-coverts bright yellowish green; back black; rump lazuline blue; wing-coverts deep rich crimson-red; scapularies dark green, tipped with black; primaries black at the base, with the external webs and the apical portion of the inner webs deep green; secondaries black, edged with deep green, and one or two with a tinge of red at the tip; tail green above, passing into yellow at the tip, the extreme end

fringed with pink; under surface of the tail black, tipped with yellow and pink as above; irides reddish orange in some, scarlet in others; bill rich orange-scarlet; feet olive-brown.

The female has the head and upper surface dull green; under surface dull yellowish green; a few of the wing-coverts crimson-red, forming a stripe down the wing; rump pale verditer blue; tail-feathers more largely tipped with pink than in the male; irides olive-brown; bill light horn-colour.

Sp. 411. PTISTES COCCINEOPTERUS, *Gould*.

CRIMSON-WINGED LORY.

If ornithologists will compare the Crimson-winged Lories of Port Essington and the adjacent north-western portions of Australia with the Red-winged birds from the east coast, I think but little doubt will remain on their minds that they are distinct from each other. The former are smaller than the latter in all their admeasurements, except in the bill, which is rather larger; and the adult males are more richly coloured, both in the green of the body and the red on the wing, which, moreover, has a crimson hue, and is not so extensive as in *P. erythropterus*; in all other respects the colouring of the two species is very similar.

I propose for this new species the trivial name of Crimson-winged Lory, and the scientific one of *Ptistes coccineopterus*.

The female so nearly resembles the same sex of *P. erythropterus* and the extra Australian species *P. vulneratus* that it is difficult to distinguish them. I may add that of the last-mentioned bird I have not yet seen a male with red shoulders, and if this conspicuous mark never occurs, the two sexes are alike in colour.

Total length of the adult male 12 inches; bill $\frac{5}{8}$; wing $7\frac{3}{4}$; tail $5\frac{3}{4}$; tarsi $\frac{3}{4}$.

Splendid adult examples of the three species above mentioned are contained in the national collection.

Genus *PLATYCERCUS*, *Vigors*.

All the members of this very well defined genus are extremely ornamental; they have very ample tails, and the power of displaying them in a manner to show off the beautiful colours with which this organ is adorned. The species are very widely spread, for they are found from Tasmania in the south to Port Essington in the north. None of them, I believe, have an *os furcatorium*, the absence of which would seem to have some influence on their flight, for they seldom employ their wings further than as a means of transport from places where they obtain an abundant supply of the grass-seeds upon which they mainly subsist, to the nearest trees of the neighbouring forest; very unlike, indeed, is their flight to that of *Ptistes*, which passes high in the air from one part of the country to another.

Bonaparte, who has subdivided the *Platycerci* still farther than I have done here, places the three species with stouter bills and less ample tails (*P. barnardi*, *P. semitorquatus*, and *P. zonarius*) in a genus by themselves, under the name of *Barnardius*; but as I conceive such terms objectionable when employed generically, and the differences alluded to unimportant, I think I shall be excused for not separating these birds from *Platycercus*.

Sp. 412. *PLATYCERCUS BARNARDI*.

BARNARD'S PARRAKEET.

Barnard's Parrot, Lath. Gen. Hist., vol. ii. p. 121.

Platycercus barnardi, Vig. and Horsf. in Linn. Trans., vol. xv. p. 283.

Barnardius typicus, Bonap. Rev. et Mag. de Zool., 1854, p. 153.

Platycercus barnardii, Gould, *Birds of Australia*, fol., vol. v. pl. 21.

To see Barnard's Parrakeet in perfection, and to observe its rich plumage in all its glory, the native country of the bird must be visited, its brooks and streamlets traced; for it

is principally on the banks of the latter, either among the "high-flooded gums" or the larger shrub-like trees along the edges of the water that this beautiful species is seen, and where the brilliant hues of its expanded wings and tail show very conspicuously as it passes from tree to tree amidst the dark masses of foliage.

The range of Barnard's Parrakeet extends throughout the interior from South Australia to New South Wales, but it seldom appears within the boundary of the latter colony; I never met with it nearer than the Liverpool Plains, from which northwards towards the interior its numbers increased, and it doubtless inhabits the banks of the Darling and all other rivers which disembogue into Lake Alexandrina; and in confirmation of this opinion I may state that I found it abundant in the Great Murray scrub of South Australia. It is generally met with in small companies of from five to ten in number, sometimes on the ground among the tall grasses, at others among the high trees, particularly the *Eucalypti*.

The sexes differ but little in colour; the males are, however, at all times the largest and finest in plumage.

I did not succeed in obtaining the eggs of this species, although it was breeding in all the large trees of the different parts of the country I visited.

Forehead red; crown, cheeks, chest, abdomen, central portion of wing, and rump verditer-green; occiput crossed by a band of brown, succeeded by a crescent-shaped mark of yellow; back bluish grey; centre of the abdomen crossed by a broad crescent of orange; primaries and spurious wing black; the external margin of each feather and the tip of the shoulder rich deep blue; two central tail-feathers deep green, passing into deep blue at the tip; the lateral feathers deep blue at the base, gradually fading into bluish white at the tip; bill horn colour; feet brown.

Sp. 413. PLATYCERCUS SEMITORQUATUS.

YELLOW-COLLARED PARRAKEET.

Psittacus semitorquatus, Quoy et Gaim. Voy. de l'Astrol. Zool., pl.

Barnardius semitorquatus, Bonap. Rev. et Mag. de Zool. 1854, p. 153.

Dow-arn, Aborigines of the lowland districts of Western Australia.

Dum-ul-uk, Aborigines of the mountain districts of Western Australia.

Twenty-eight Parrakeet, Colonists of Swan River.

Platycercus semitorquatus, Gould, *Birds of Australia*, fol., vol. v. pl. 19.

This noble Parrakeet is abundantly dispersed over the greater portion of Western Australia, where it inhabits almost every variety of situation, sometimes searching for food upon the ground, and at others on the trees; its chief food being either grass-seeds or the hard-stoned fruits and seeds peculiar to the trees of the country in which it lives. It is equally as abundant at King George's Sound as it is at Swan River; I have not been so fortunate as to obtain any precise information as to the extent of its range over the continent, the only parts of the country from which I have received specimens being the two localities mentioned above.

While on the wing its motions are rapid, and it often utters a note, which from its resemblance to those words has procured for it the appellation of "twenty-eight" Parrakeet from the colonists; the last word or note being sometimes repeated five or six times in succession.

The *Platycercus semitorquatus* begins breeding in the latter part of September or beginning of October, and deposits its eggs in a hole in either a gum- or mahogany-tree, on the soft black dust collected at the bottom; they are from seven to nine in number and of a pure white. In most instances these eggs have a pinky blush before being blown.

This is the largest species of ground Parrakeet that has yet been discovered in Australia.

The sexes may be distinguished by the smaller size of the female, and by her markings being much less distinct.

Forehead crossed by a narrow band of crimson ; head blackish brown, passing into blue on the cheeks ; back of the neck encircled by a band of bright yellow ; back and upper surface generally deep grass-green, passing into pale green on the shoulders ; primaries and spurious wing blackish brown, the external webs of each feather deep blue ; two central tail feathers deep grass-green, the next on each side the same, passing into blue and ending in bluish white at the tip ; the lateral feathers green at the base passing into blue, which gradually fades into bluish white at the tip ; chest green ; under surface light green ; irides dark brown ; bill light horn-colour, becoming of a lead-colour on the front of the upper mandible ; legs and feet dark brown.

Sp. 414. **PLATYCERCUS ZONARIUS.**

BANDED PARRAKEET.

Psittacus zonarius, Shaw's Nat. Misc., pl. 657.

—— *viridis*, Shaw's Gen. Zool., vol. viii. p. 465.

—— *baueri*, Temm. in Linn. Trans., vol. xiii. p. 118.

—— *cyanomelas*, Kuhl, Consp. Psitt. in Nov. Act., vol. x. p. 53.

Bauer's Parrot, Lath. Gen. Hist., vol. ii. p. 120.

Platycercus baueri, Vig. and Horsf. in Linn. Trans., vol. xv. p. 283.

—— *zonarius*, Wagl. Mon. Psitt. in Abhand., p. 538.

Nanodes ? zonarius, Steph. Cont. of Shaw's Gen. Zool., vol. xiv. p. 119.

Conurus cæruleo-barbatus, Bourj. St.-Hil. Perr., tab. 40.

Barnardius zonarius, Bonap. Rev. et Mag. de Zool. 1854, p. 153.

Platycercus baueri, Gould, Birds of Australia, fol., vol. v. pl. 85.

Although this bird is very nearly allied to the *Platycercus semitorquatus*, it possesses several characters by which it may be distinguished from that species ; in the first place it is much less in size, and in the next it has a brighter and more contrasted style of plumage, the green of the under surface of which is relieved by a gorgeous band of bright yellow across

the abdomen ; the rich band of scarlet which ornaments the front of the *P. semitorquatus* is also wanting in the present bird, or if not entirely, the slightest indication of it and that only in the finest old males is to be seen. The only portion of Australia from which I have received specimens of this bird is Port Lincoln. The sexes present a similar contrast in the lesser size and less brilliant style of colouring of the female.

Head and upper part of the neck black, the cheek-feathers tipped with deep blue ; at the back of the neck a broad crescent of bright yellow ; chest, back, and wings dark green, passing into verditer-green on the outer webs of the wing-coverts ; rump and upper tail-coverts grass-green ; two centre tail-feathers deep green, the next on each side deep green, tipped with bluish white, the remainder deep green at the base, passing into bluish white, the blue on the outer margins of the feathers being of lazuline hue ; centre of the abdomen deep gamboge-yellow ; remainder of the under surface yellowish grass-green ; primaries, secondaries, and spurious wing-coverts black, with the base of their external webs rich deep blue ; bill horn-colour ; feet dark brown.

Sp. 415. **PLATYCERCUS PENNANTII.**

PENNANT'S PARRAKEET.

Psittacus pennantii, Lath. Ind. Orn., vol. i. p. 90.

—— *gloriosus*, Shaw. Nat. Misc., pl. 53.

—— *splendidus*, Shaw, Mus. Lev., pl. 7. p. 27.

Perruche à large queue, Levaill. Hist. Nat. des Perr., pls. 78, 79.

Pennantian Parrot, Lath. Gen. Syn., Supp. vol. i. p. 61 ; vol. ii. p. 83.

Psittacus elegans, Gmel. Edit. Linn. Syst. Nat., vol. i. p. 318

Platycercus pennantii, Vig. and Horsf. in Linn. Trans., vol. xv. p. 280.

Dulang and *Julang*, Aborigines of New South Wales.

Platycercus pennantii, Gould, *Birds of Australia*, fol., vol. v. pl. 23.

This beautiful bird is very generally dispersed over New

South Wales, where it frequents grassy hills and brushes, particularly those of the Liverpool range and all similar districts: it also inhabits Kangaroo Island, but I never met with it in the belts of the Murray, or in any of the forests round Adelaide, in which part of the country the *Platycercus adelaidensis* occurs abundantly. Its food consists of berries and the seeds of various grasses, to which insects and caterpillars are occasionally added, and to obtain which it descends to the bases of the hills and to open glades in the forests; I have often flushed it from such situations; and when six or eight rose together with outspread tails of beautiful pale blue, offering a decided contrast to the rich scarlet livery of the body, I never failed to pause and admire the splendour of their appearance, of which no description can give an adequate idea; the *Platycerci* must, in fact, be seen in their native wilds before their beautiful appearance can be appreciated, or the interesting nature of their habits at all understood.

Like the other members of the genus, the *Platycercus pennantii* runs rapidly over the ground, but its flight is not enduring. In disposition it is tame and destitute of distrust, and as a pet for the aviary or cage few birds can exceed it in interest or beauty; consequently it is one of the commonest of the living Parrakeets sent from Australia to this country.

It breeds in the holes of the large gum-trees, generally selecting those on the hill-sides within the brushes; of which situations, the cedar brushes of the Liverpool range appear to be a favourite. The months of September, October, and November constitute the breeding-season. The eggs, which are white, about an inch and two lines long, eleven and a half lines broad, and from four to seven in number, are deposited on the rotten wood at the bottom of the hole.

The colouring of the sexes when fully adult is alike, but much variation exists between youth and maturity; during

the first autumn the young birds are clothed in a plumage of a nearly uniform green ; to this succeeds a parti-coloured livery of scarlet, blue, and green, which colouring is continually changing until the full plumage of maturity is assumed ; and hence has arisen no little confusion respecting this species in the writings of the older ornithologists, and it is not to be wondered at that its synonyms are so numerous.

The adult male has the head, neck, all the under surface, the rump, and upper tail-coverts rich deep crimson-red ; the feathers of the back and scapularies black, broadly margined with rich crimson-red ; the cheeks and shoulders coerulean blue ; the greater wing-coverts pale blue ; the primaries and secondaries black, with the basal half of their external webs margined with deep blue ; the two centre tail-feathers green, passing into blue on their margins and at the tip ; the remainder black on the inner webs for three-fourths of their length ; deep blue for nearly the same length on their outer webs, and largely tipped on both webs with pale blue, which becomes still paler to the tips of the feathers ; bill horn-colour ; irides very dark brown ; feet blackish brown.

Sp. 416. PLATYCERCUS ADELAIDENSIS, *Gould*.

ADELAIDE PARRAKEET.

Platycercus adalaidiæ, Gould in Proc. of Zool. Soc., part viii. p. 161.
Pheasant Parrot, Colonists of South Australia.

Platycercus adalaidiæ, Gould, *Birds of Australia*, fol., vol. v. pl. 22.

This beautiful *Platycercus* is a native of South Australia, and from the circumstance of my having procured some of my finest specimens in the very streets of the city of Adelaide, I have been induced to give it the specific name of *adalaidensis*. In all probability the bird may in a few years be looked for in vain even in the suburbs of this rapidly increasing settlement, as it is too large a species and possesses too many attractions to remain unmolested ; indeed it was much

persecuted and destroyed by the newly-arrived emigrants at the time I paid this distant land a visit.

The *Platycercus adelaidensis* at first caused me considerable perplexity from its close similarity in some stages of its plumage to the *P. pennantii*; as in that species, the plumage of the young for the first season is wholly green, which colouring gradually gives place to pale orange-red on the head, rump and upper surface, the scapularies and back feathers being margined with the same, but which soon disappears and gives place to dull yellow on the flanks and olive-yellow on the upper surface, the scapularies and back feathers in the mature dress being edged with yellowish buff and violet. It was only by killing numerous examples in all their various stages of plumage, from the nestling to the adult, that I was enabled to determine the fact of its being a distinct species.

When I visited the interior of South Australia, in the winter of 1838, I found the adults associated in small groups of from six to twenty in number; while near the coast, between Holdfast Bay and the Port of Adelaide, the young in the green dress were assembled in flocks of hundreds; they were generally on the ground in search of grass-seeds, and when so occupied would admit of a near approach: when flushed they merely flew up to the branches of the nearest tree. It is impossible to conceive anything more beautiful than the rising of a flock of newly moulted adults of this species, for their beautiful broad blue tails and wings glittering in the sun present a really magnificent spectacle.

The fully adult male has the crown of the head, lores, sides of the neck, breast, and centre of the abdomen scarlet, passing into dull yellow on the flanks; cheeks and wing-coverts light lazuline blue; primaries deep blue, passing into black at the extremity; back of the neck dull yellow; back black, each feather margined with yellowish buff, some of the marginalia tinged with blue, others with scarlet; rump and upper tail-coverts dull greenish yellow, the latter sometimes tinged

with scarlet ; two centre tail-feathers greenish blue ; the remainder deep blue at the base, gradually becoming lighter until almost white at the tip ; irides brown ; bill horn-colour ; feet greyish brown.

Total length $13\frac{1}{2}$ inches ; wing 7 ; tail 8 ; tarsi $\frac{5}{8}$.

Sp. 417. **PLATYCERCUS FLAVIVENTRIS.**

YELLOW-BELLIED PARRAKEET.

Psittacus flaviventris, Temm. in Linn. Trans., vol. xiii. pp. 116–118.

—— *brownii*, Kuhl, Nova Acta etc., vol. x. p. 56, no. 90.

Perruche à large queue, Le Vaill. Hist. Nat. des Perr., pl. 80.

Van Diemen's Parrot, Lath. Gen. Hist., vol. ii. p. 130, no. 33.

Platycercus flaviventris, Vig. and Horsf. in Linn. Trans., vol. xv. p. 281.

—— *caledonicus*, p., Wagl. Mon. Psitt., p. 532.

—— *xanthogaster*, Steph. Cont. of Shaw's Gen. Zool., vol. xiv. p. 120.

Green Parrot, Colonists of Tasmania.

Platycercus flaviventris, Gould, *Birds of Australia*, fol., vol. v. pl. 24.

The Yellow-bellied Parrakeet is dispersed over all parts of Tasmania and the islands in Bass's Straits ; but is not confined to particular localities like the *Platycercus eximius*, with which it sometimes associates. It frequents every variety of situation, from the low-crowned hills and gullies in the depths of the forest to the open cleared lands and gardens of the settlers. It runs over the ground with great facility, and when observed in small flocks searching for seeds among the tall grass, few birds are seen to greater advantage.

I found this species very abundant on the banks of the Tamar, and in one instance I saw hundreds congregated at a barn-door among the straw of some recently thrashed corn, precisely after the manner of Pigeons and Sparrows in England.

The sexes during the first year are not to be distinguished from each other ; but when fully adult, the female is smaller in size and less brilliantly coloured than the male.

Besides grass-seeds, the flowers of the *Eucalypti* with insects and their larvæ constitute a considerable portion of its food, and it may be often seen very busily engaged about the branches loaded with flowers in the depths of the forest far away from any cleared lands.

If we take into consideration the kind of food upon which this bird subsists, we might naturally conclude that its flesh would be delicate, tender, and well-flavoured. When I visited Tasmania it was commonly eaten by the settlers, and it was not long after my arrival before I tested its goodness, when I found it so excellent that I partook of it whenever an opportunity for so doing presented itself.

Holes in the large gum-trees afford this species a natural breeding-place. The eggs, which are laid in September and the three following months, are of a pure white colour, and six or eight in number, one inch and two lines long by eleven and a half lines broad. When the young are first hatched they are covered with long, white down, and present an appearance not very dissimilar to that of a round ball of white cotton wool.

Forehead crimson; crown of the head and back of the neck pale yellow, each feather very slightly margined with brown; space under the eye dull crimson; cheeks blue; back and shoulders dark olive-black, each feather edged with green; middle of the wings blue; the basal half of the primaries blue on their external edges, the remainder blackish brown; rump and two middle tail-feathers green, the remainder of the tail-feathers dark blue at the base, lighter towards the tip; under surface of the body yellow; bill flesh-colour; feet greyish brown.

The adults of both sexes are very similar, but a considerable difference exists in birds of different ages, the young of the year being greenish olive with a slight tinge of blue on the cheeks, wings, and outer tail-feathers, and a faint indication of the red mark on the forehead. As they advance in age

they gradually assume the plumage of the adult, which is not fully accomplished until the second or third year.

Sp. 418. **PLATYCERCUS FLAVEOLUS**, *Gould*.

YELLOW-RUMPED PARRAKEET.

Platycercus flaveolus, Gould in Proc. of Zool. Soc., Part V. p. 26.

Platycercus flaveolus, Gould, *Birds of Australia*, fol., vol. v. pl. 25.

I have no other information to communicate respecting this beautiful *Platycercus*, than that it is an inhabitant of New South Wales, and is abundant on the banks of the rivers Lachlan and Darling. It was first sent to this country by Captain Sturt. I also saw in the Museum at Sydney several specimens which had been collected by Sir Thomas Mitchell during his expeditions to the interior. In all these specimens little or no variation in their plumage was observable—a circumstance which induces me to suspect that, like the Rose-hill Parrakeet, the young are clothed in a similar character of plumage to that of the adults, or if not, that they gain the full colouring at a very early age: the sexes offer no external differences.

Forehead crimson; cheeks light blue; crown of the head, back of the neck, back, rump, upper tail-coverts, and all the under surface pale yellow, the feathers of the back being black in the centre and pale yellow on their outer edges; middle of the wing pale blue; spurious wing and the outer web of the basal portion of the primaries deep violet-blue, the remainder of the primaries dark brown; two central tail-feathers tinted with green at the base, passing into blue towards the tip; the remaining feathers have the basal portion of their outer webs deep blue, passing into very pale blue towards their tips; the inner webs brown for a greater or less portion of their length, the extreme tips of all being white; bill light horn-colour; feet dark brown.

Total length $13\frac{1}{4}$ inches; wing 7; tail $7\frac{1}{2}$; tarsi $\frac{3}{4}$.

Sp. 419. PLATYCERCUS PALLICEPS, *Vig.*

PALE-HEADED PARRAKEET.

Platycercus palliceps, Vig. in Lear's Ill. Psitt., pl. 19.

Moreton Bay Rose-hill, Colonists of New South Wales.

Platycercus palliceps, Gould, Birds of Australia, fol., vol. v. pl. 26.

This elegant species of *Platycercus* is a native of the eastern portions of Australia, and is tolerably numerous at Moreton Bay, where all the specimens I have seen were procured. It is known in Sydney by the name of Moreton Bay Rose-hill, an appellation bestowed on it from its near alliance to the *Platycercus eximius*. The specific name of *palliceps* has been applied to this bird from the light colouring of the head, which amounts in some specimens to a total absence of colour: this, however, I think, may be attributed to the effects of exposure to light, since, in recently moulted birds, there is always a delicate tinge of yellow pervading the crown; the pale blue of the cheeks also appears to be affected by the same cause, though not to so great an extent.

It bears confinement remarkably well, and is very docile and familiar, which, added to its very elegant plumage, renders it a general favourite.

The sexes differ in no respect in outward appearance, with the exception of a slight superiority of size in the male.

Crown of the head either wholly white or pale gamboge-yellow; in some specimens also there is a fine line of scarlet crossing the forehead, and the lower part of the cheeks is deep blue; feathers of the nape, back, and scapularies black, broadly margined with gamboge-yellow; rump in some instances greenish blue, in others this part is strongly tinged with gamboge-yellow; primaries and secondaries blackish brown, with the base of their external webs deep blue; greater and lesser wing-coverts, and the shoulders, both above and below, beautiful blue; that part of the wing

nearest the body black ; all the under surface verditer-blue, with the exception of the under tail-coverts, which are scarlet ; two middle tail-feathers greenish blue ; the basal half of the remainder being blackish brown on their internal webs, rich deep blue on their outer webs, and the terminal half delicate pale blue, passing into white at the tip ; bill horn-colour ; irides blackish brown ; feet dark mealy brown.

Sp. 420. **PLATYCERCUS CYANOGENYS**, *Gould*.

BLUE-CHEEKED PARRAKEET.

Platycercus cyanogenys, Gould in Proc. of Zool. Soc., part xxiii. pp. 165, 166.

—— *amathusia*, Bonap. in Cab. Journ. für Orn. 1857.

Platycercus cyanogenys, Gould, *Birds of Australia*, fol., Supplement, pl.

The presence of so many of the beautiful *Platycerci* adds a peculiar charm to the country of Australia, and gives to it a tropical character at once striking and novel ; the emigrant must, however, greatly extend his roaming before this bird comes under his notice, for it has only as yet been found at the distant peninsula of Cape York. It was there that the single specimen now in the British Museum was shot by Mr. Macgillivray, on the 7th of October 1848.

The *Platycercus cyanogenys* is very nearly allied to *P. palliceps*, but differs in the greener tone of the colouring of the body, and in the rich blue cheeks, which suggested the specific name.

Crown of the head pale sulphur-yellow ; cheeks cœrulean blue ; feathers of the nape, back, and scapularies black, broadly margined with sulphur-yellow, and stained with green on the lower part of the back ; rump and upper tail-coverts greenish-yellow, with an extremely narrow fringe of black at the tip of the feathers ; shoulder and greater wing-coverts deep blue ; lesser coverts black, bordered with deep

blue; primaries and secondaries blackish-brown, the basal half of their external webs deep blue, the apical half pale blue; tertiaries black, broadly margined with greenish yellow; breast pale greenish yellow; abdomen light greenish blue; all the feathers of the under surface slightly fringed with black; under tail-coverts scarlet, narrowly margined with yellow; two middle tail-feathers greenish blue; the next on each side blue, slightly tipped with pale blue; the remainder blackish brown at the base of their internal webs, and deep blue externally, their apical portions being beautiful pale blue.

Total length 13 inches; wing $6\frac{1}{4}$; tail 7; tarsi $\frac{3}{4}$.

Sp. 421. **PLATYCERCUS VENUSTUS.**

BEAUTIFUL PARRAKEET.

Psittacus venustus, Kuhl, Nov. Acta, vol. x. p. 52.

— *brownii*, Temm. in Linn. Trans., vol. xiii. p. 119.

Brown's Parrot, Lath. Gen. Hist., vol. ii. p. 139.

Platycercus brownii, Vig. and Horsf. in Linn. Trans., vol. xv. p. 282.

— *venustus*, Kuhl, Mon. Psitt. in Abhand., p. 529.

Moon-dark, Aborigines of Port Essington.

Smutty Parrot, Residents at ditto.

Platycercus brownii, Gould, *Birds of Australia*, fol., vol. v. pl. 31.

This is a very abundant species on the northern and north-western coast of Australia, where it inhabits grassy meadow-like land and the edges of swamps, and mostly feeds upon the seeds of grasses and other plants, sometimes it is seen in pairs, but more frequently in families of from ten to twenty in number. It frequently utters a rapid succession of double notes resembling '*trin-se trin-se*.' Its flight is low, somewhat rapid and zigzag, seldom farther prolonged than from tree to tree. Specimens of this bird, given me by my friends Sir George Grey and Mr. Bynoe, from the north-west coast, differ somewhat in plumage from those killed on the

Cobourg Peninsula; the concentric bands on the breast are much finer, the extreme margins only of the feathers being black; I have one specimen also with the whole of the crown of the head of a deep blood-red, and others with more or less of this colour. That this kind of plumage is unusual is proved by the fact of numerous specimens from Port Essington not exhibiting it, and had I not seen others from the north-west with black crowns (with the exception of the band across the forehead), I should have regarded as specific what I now look upon as a mere local variety, or possibly a very old bird.

Crown of the head, lores, and ear-coverts deep black; cheeks snow-white, bounded below with blue; breast and rump pale yellow, each feather slightly fringed with black; feathers of the back deep black, with a broad margin of pale yellow; wing-coverts, outer webs of the secondaries, and base of the primaries rich blue, inner webs of the primaries and secondaries deep black; under tail-coverts scarlet; centre tail-feathers green at the base, passing into blue on the margins and at the tip; lateral feathers deep blue at the base of the outer webs, brown at the base of the inner webs, and then pale blue, terminating in white, with black shafts; irides blackish brown; bill light horn-colour, passing into blue at the base; legs and feet blackish brown.

Young birds are similar in colour, but have all the markings dull and indistinct; as the individual approaches to maturity the breast becomes ornamented with a number of crescent-shaped markings of black and pale yellow, and as the bird advances in age the yellow increases in extent and the black nearly disappears.

Hitherto this bird has been known to ornithologists as the *Platycercus browni*, a specific appellation applied to it in honour of the celebrated botanist; but which, I regret to say, must give place to the prior one of *venustus*.

Sp. 422. PLATYCERCUS EXIMIUS, *Vig. and Horsf.*

ROSE-HILL PARRAKEET.

Psittacus eximius, Shaw, Nat. Misc., pl. 96.

Perruche omnicolore, Le Vaill., Hist. Nat. des Perr., p. 29, pl. 28.

Nonpareil Parrot, Lath. Gen. Hist., vol. ii. p. 138, No. 41.

Platycercus eximius, Vig. and Horsf. in Linn. Trans., vol. xv. p. 281.

—— *ignitus*, Leadb. in Proc. of Zool., part v. p. 8, abnormal colouring.

Psittacus capitatus, Shaw, Gen. Zool., vol. viii. p. 466.

Rose-hill Parrakeet, Colonists of New South Wales.

Platycercus eximius, Gould, Birds of Australia, fol., vol. v. pl. 27.

Although the Rose-hill Parrakeet is one of the commonest birds of New South Wales and Tasmania, it is very local, a river frequently constituting the boundary of its habitat, over which it so rarely passes, that I never saw the bird on the south side of the Derwent; while in the forests of the opposite shore, not more than a quarter or half a mile distant, it was very numerous. I believe it is never seen in the forests clothing the borders of D'Entrecasteaux' Channel on the south, or of the River Tamar on the north of the island, those districts being inhabited by the *Platycercus flaviventris*, whose greater size and olive-green plumage are in beautiful accordance with those vast and but little explored forests of ever-green *Eucalypti*. The *Platycercus eximius* resorts to the open parts of the country, undulating grassy hills and plains bordered and studded here and there with large trees or belts of low acacias or banksias, among the branches of which, particularly those of the acacias, this beautiful bird may be seen in small companies, the rich scarlet and yellow of their breasts vieing with the lovely blossoms of the trees; in a word, districts of a sandy nature, small plains, open spots among the hills, and thinly timbered country where grass abounds, constitute the peculiar and natural habitat of this bird. Like the Sparrow in England, this beautiful Parrakeet may constantly be seen resorting to the public roads, and upon being dis-

turbed by the passer-by will merely fly off to the nearest tree, or to the rails of the wayside fences. Scenes like these fill the mind with sensations of no ordinary description, and excite the greatest astonishment in those who have recently arrived in the country; the novelty, however, soon wears off, and a caged lark, linnet, or blackbird from the land of their birth are highly cherished and valued, while the beautiful productions of the island are passed by unheeded, except to deal out destruction among them, with no sparing hand, for some slight injury they may have inflicted upon the rising corn. The above remarks refer more particularly to Tasmania, but apply with equal force to New South Wales, where the bird inhabits all situations similar in character to those above referred to. It is found in great numbers in the district of the Upper Hunter, and was formerly very numerous at Parramatta, particularly in the neighbourhood of Rose Hill, whence its name. It breeds abundantly both in Tasmania and New South Wales, during October and the three following months, and lays from seven to ten beautiful white eggs, one inch and an eighth long by seven-eighths of an inch broad, in the hollow of a gum-tree.

The natural food of this bird consists of seeds of various kinds, particularly those of different grasses, and occasionally of insects and caterpillars.

Its flight is short and undulating, and is rarely extended to a greater distance than a quarter of a mile, as the bird frequently alights on a leafless branch, always flying a little below it and rising again just before it settles.

Its note is a somewhat pleasing whistling sound, which is very frequently uttered.

The sexes are alike in plumage, and the young assume the bright colouring from the nest; the birds of the year, although they may have attained their full size, are not so brilliant as the adult, and may always be distinguished by the bill and nostrils being of a delicate gamboge-yellow.

Crown of the head, back of the neck, chest, and under tail-coverts scarlet ; cheeks white ; feathers of the back black, margined all round with rich yellow ; rump, upper tail-coverts, and lower part of the belly pale green ; centre of the belly yellow ; shoulders and middle of the wing rich blue ; external edges of the primaries blue, the remainder of these feathers dark brown ; two middle tail-feathers green, passing into bluish green at the tip, the remainder of the tail-feathers dark blue at the base, passing into light blue, and tipped with white ; bill horn-colour ; feet brown ; irides brown.

Specimens from Tasmania are rather larger in size, and have the markings of the upper surface of a greener yellow, and altogether less brilliant than those from New South Wales.

Sp. 423. **PLATYCERCUS SPLENDIDUS**, *Gould*.

SPLENDID PARRAKEET.

Platycercus splendidus, Gould in Proc. of Zool. Soc., Part XIII. p. 105.

Platycercus splendidus, Gould, *Birds of Australia*, fol., vol. v. pl. 28.

The lovely species here described was killed by Gilbert in the newly-located district to the northward of the Darling Downs in New South Wales. In beauty it even exceeds the common Rose-hill Parrakeet, and is consequently one of the finest species of the genus yet discovered. It differs from that bird in having the centre of the breast, only, of a rich scarlet, the sides being gamboge-yellow ; in the lower part of the abdomen and the upper tail-coverts being verditer instead of grass-green, and in the feathers of the back being broadly margined with rich gamboge instead of greenish yellow. In the youthful state it very much resembles the *P. palliceps*, from which however it differs in having the head yellow instead of pale yellowish white, and the breast yellow instead of pale blue ; the breast also has indications of the rich scarlet

of maturity, of which colour no trace is at any time perceptible in the *P. palliceps*.

Head, sides of the neck and centre of the breast scarlet; cheeks white, faintly tinged with blue; feathers of the back and scapularies black, broadly margined with gamboge-yellow; lower part of the back and upper tail-coverts pale green; on the shoulder a patch of black; wing-coverts pale blue; primaries black with the exception of the basal portion of the external web, which is rich deep blue; two central tail-feathers dark green at the base, passing into deep blue on the apical half of the external web and tipped with black; the next on each side is black on the internal web, green at the base of the external web, blue for the remainder of its length, and slightly tipped with white; the remainder of the tail-feathers are deep blue at the base of the external, and black at the base of the internal web, the remaining portion of both webs being pale delicate blue, passing into white at the tip; sides of the breast and the abdomen bright gamboge-yellow; vent pale green in some, in others pale bluish green; under tail-coverts scarlet; irides dark brown; bill horn-colour; feet mealy brown.

Total length 12 inches; bill $\frac{5}{8}$; wings 6; tail 7; tarsi $\frac{3}{4}$.

Sp. 424. **PLATYCERCUS ICTEROTIS**, *Wagl.*

YELLOW-CHEEKED PARRAKEET.

Psittacus icterotis, Temm. in Linn. Trans., vol. xiii. p. 120.

Platycercus stanleyii, Vig. in Zool. Journ., vol. v. p. 278.

—— *icterotis*, Wagl. Mon. Psitt. in Abhand. p. 530.

—— *icterodes*, Bourj. St.-Hil. Supp. to Le Vaill. Hist. Nat. des Perr., pl. 30.

Goôtd-un-goôtd-un, Aborigines of the lowland, and

Moy-a-duk, Aborigines of the mountain districts of Western Australia.

Rose-hill of the Colonists of Swan River.

Platycercus icterotis, Gould, *Birds of Australia*, fol., vol. v. pl. 29.

From the little that is known of the history of this species

it would appear that its range is very limited, the colony of Swan River in Western Australia being the only locality in which it has yet been seen in a state of nature; there, however, it is one of the most common birds of the country, and, except in the breeding-season, may always be seen in large flocks, which approach so near to the houses of the settlers as frequently to visit their gardens. It generally feeds on the ground, on the seeds of various kinds of grasses, and not unfrequently attacks ripe fruit of the garden, especially if it be left unprotected.

Like most other members of the genus, the *Platycercus icterotis* does not differ in the colouring of the sexes of the same age. During the first year they are green, which gradually gives place to the fine colouring of maturity.

Its flight is of short duration, and consists of a series of rather rapid undulating sweeps.

Its note is a feeble, piping kind of whistle, which is occasionally so much varied and lengthened as almost to assume the character of a song.

The eggs, which are white and six or seven in number, are eleven lines long and nine and a half lines broad; they are deposited in the holes of large trees without any nest.

Crown of the head and back of the neck, chest, and all the under surface scarlet; cheeks and thighs yellow; feathers of the back black, bordered with green, yellow, and in some instances scarlet; rump and upper tail-coverts yellowish green; shoulders and outer edges of the primaries blue, the inner webs and tips of the latter blackish brown; two middle tail-feathers green; the remaining feathers light blue tipped with white, with the basal portion of a darker blue tinged with green; bill light horn-colour; feet and legs dull ashy brow; irides blackish brown.

The young birds of both sexes are nearly of a uniform green, becoming parti-coloured as they advance in age; the scarlet of the crown and abdomen and the yellow of the

cheeks gradually taking the place of the green colouring of youth.

Genus PURPUREICEPHALUS, *Bonaparte*.

Only one species of this form is at present known—the *Purpureicephalus pileatus*, which differs so much in the colouring of its plumage from every other species of the great family of Parrots, as to render it one of the most remarkable yet discovered; in the form and structure of the bill it deviates from the true *Platycerci*, and it will probably be found that its habits are peculiar.

Sp. 425. PURPUREICEPHALUS PILEATUS.

RED-CAPPED PARRAKEET.

Platycercus pileatus, Vig. in Zool. Journ., vol. v. p. 274.

Psittacus purpureocephalus, Quoy et Gaim. Voy. de l'Astrolabe, pl. 22.

Conurus purpureocephalus, Bourj. de St.-Hil. Perr. tab. 39.

Purpureicephalus pileatus, Bonap. Rev. et Mag. de Zool. 1854, p. 153.

Platycercus rufifrons, Less. Traité d'Orn., p. 208?

Pezoporus rufifrons, Bourj. de St.-Hil. Perr., tab. 9?

Dja''-rail-bur''-tong, Aborigines of the lowland districts of Western Australia.

Blue Parrot of the Colonists.

Platycercus pileatus, Gould, Birds of Australia, fol., vol. v. pl. 32.

The Red-capped Parrakeet is an inhabitant of Western Australia, where it is rather numerously dispersed over the country from King George's Sound to the northern limits of the colony. I have also received specimens from the neighbourhood of Port Essington. It is usually seen in small families feeding on the ground, but upon what kind of food it subsists has not been ascertained. The breeding-season extends over the months of October, November, and December. The hollow dead branch of a gum- or mahogany-tree is the place usually chosen by the female for the reception of her eggs,

which are milk-white and from seven to nine in number, about an inch and an eighth long by seven-eighths of an inch broad.

The flight of this species, although swift, is not of long duration, nor is it characterised by those undulating sweeps common to the members of the genus *Platycercus*. Its voice is a sharp clucking note several times repeated, in which respect it also offers a marked difference from those birds.

Forehead, crown and nape deep maroon red; cheeks yellowish green, becoming more yellow on the sides of the neck; back, scapularies and greater wing-coverts deep green; rump jonquil-yellow; edge of the shoulder, spurious wing and base of the outer webs of the primaries rich deep blue; remainder of the primaries and the secondaries deep black; breast and abdomen blue; vent and under tail-coverts scarlet; two centre tail-feathers yellowish green, deepening into black at the tip and crossed by indistinct bars of a darker tint; lateral feathers green at their base, passing into black on their inner webs, and into pale blue on the outer, both webs becoming blue towards the extremity of the feather, and fading into white at the tip; irides dark brown; bill horn-colour; legs and feet dull brown.

The females are never so finely marked as the males, neither are they so large or so gracefully formed.

The young during the first year of their existence are of nearly uniform green; at the same time, the hues which characterize the adult are perceptible at almost any age.

Genus PSEPHOTUS, *Gould*.

All the members of this genus are confined to Australia, and hold an intermediate station between the *Platycerci* and the *Euphemæ*. They pass much of their time on the ground, where the principal part of their food is procured, inhabit the interior rather than the country near the coast, and are adapted for the open plains, where they often assemble in vast flocks.

Sp. 426. PSEPHOTUS HÆMATORRHOUS.

RED-VENTED PARRAKEET.

Psephotus hæmatogaster, Gould, Birds of Australia, fol., vol. v. pl. 33.

— *hæmatorrhous*, Bonap. Rev. et Mag. de Zool., 1854, p. 154.

Platycercus hæmatogaster, G. R. Gray, List of Spec. of Birds in Coll. Brit. Mus., part iii. sec. ii. p. 7.

Blue bonnet of the Colonists of New South Wales.

Psephotus hæmatogaster, Gould, Birds of Australia, fol., vol. v. pl. 33.

This species of Parrakeet is an inhabitant of the interior of New South Wales, where it frequents the borders of the rivers Namoi and Darling; and in all probability its range extends far to the northward; but, so far as is yet known, it has never been found in Southern or Western Australia; I met with it in tolerable abundance in the neighbourhood of the Lower Namoi, where it appeared to give a decided preference to those parts of the plains which were of a loose mouldy character, and with which the colour of its back so closely assimilates as to be scarcely distinguished from it. Like the other members of the family, it is mostly observed in small flocks, feeding upon the seeds of the various grasses abounding on the plains. It is only when the bird, after a short flight, alights on the branches, that the splendid scarlet of the abdomen, relieved by the yellow of the sides, is seen to advantage; when thus seen, however, it is a truly beautiful object, and is scarcely excelled by any other species of the group.

I did not ascertain any particulars respecting its nidification, but we may easily suppose that it breeds in the districts above mentioned, as I met with it there at Christmas—the height of the Australian summer.

The male has the forehead and face ultramarine blue; crown of the head, upper surface, sides of the neck, and the chest greyish olive-brown, washed with yellow on the rump and upper tail-coverts; lesser wing-coverts mingled verditer-

green and blue ; greater coverts rich reddish chestnut ; basal half of the external webs of the primaries and secondaries and edge of the wing rich indigo-blue ; under surface of the shoulder light indigo-blue ; inner webs and tips of the primaries dark brown ; apical half of the external web of the primaries fringed with grey ; two centre tail-feathers light olive-green, passing into deep blue at the tip ; the remainder deep blue at the base, largely tipped with white, the blue gradually blending with the white on the external web ; upper part of the abdomen and flanks primrose-yellow ; centre of the abdomen and under tail-coverts crimson-red ; irides dark brown ; feet mealy brown ; bill horn-colour.

The female differs in being smaller, and less brilliant in all her markings.

Sp. 427. PSEPHOTUS XANTHORRHOU, *Gould*.

YELLOW-VENTED PARRAKEET.

Platycercus hæmatogaster, Gould in Proc. of Zool. Soc., part v. p. 89 ;
Birds of Australia (cancelled), part ii. pl. 7.

Psephotus xanthorrhous, Gould, Bonap. Rev. et Mag. de Zool., 1854,
p. 154.

Platycercus xanthorrhous, G. R. Gray, List of Spec. of Birds in Coll.
Brit. Mus., part iii. sec. ii. p. 7.

In the introduction to the folio edition I remarked that I had reason to believe that the specific term *hæmatogaster* had been inadvertently applied to two distinct species, both of which have the centre of the abdomen red, but differ from each other in the colouring of the centre of the wing and of the under tail-coverts ; a further investigation of the subject having convinced me that this is the case, it becomes necessary to take some steps for the correction of the error. With this view, therefore, I have to state that my description of *P. hæmatogaster*, published in the 'Proceedings of the Zoological Society' above quoted, and the figure, with the same name attached, which appeared in the second of the two parts of

the 'Birds of Australia,' published prior to my visit to that country, and cancelled on my return, have reference to the present species, which has bright yellow under tail-coverts and a lengthened patch of saffron-yellow on the centre of the wing, while the *P. hæmatogaster* of the folio edition (vol. v. pl. 33) is the other species, with red under tail-coverts and a patch of red on the wing. The late Prince Charles Bonaparte and myself agreed that it would be well to abolish the term *hæmatogaster*, and call the former bird *xanthorrhous* and the latter *hæmatorrhous*, a course which I here adopt, and trust ornithologists will agree in its propriety.

On reference to my account of *P. hæmatorrhous* it will be seen that the native habitat of that bird is the interior of New South Wales, while the present ranges more to the westward, having been found in abundance by Captain Sturt at the Depôt, and by Mr. White, of Adelaide, at Cooper's Creek. There can be no mistake on this point, for I have specimens from both those gentlemen now before me. Captain Sturt's are a little darker on the upper surface than those transmitted by Mr. White.

Forehead and face ultramarine blue; crown of the head, upper surface, ear-coverts, and chest delicate yellowish grey, the yellow tint becoming deeper on the rump and upper tail-coverts; edge of the shoulders, above and beneath, light greenish blue; anterior portion of the greater wing-coverts and basal portion of the external webs of the primaries and secondaries rich deep blue; remainder of the primaries and secondaries dark blackish brown with whitish margins, the hinder portion of the greater coverts and the tertiaries deep saffron-yellow, forming a patch along the centre of the wing; flanks and under tail-coverts rich primrose-yellow, with specks of red on the tips of some of the latter; centre of the abdomen rich scarlet; base of the two central tail-feathers light olive-green, tinged with oil-green, merging into dark blue at the tips, the remaining feathers deep blue at the base,

gradually passing into white at the tip; bill light horn-colour; feet nearly brown.

Total length 12 inches; wing 5; tail $7\frac{1}{4}$; tarsi $\frac{3}{4}$.

Sp. 428. PSEPHOTUS CHRYSOPTERYGIUS, *Gould*.

GOLDEN-SHOULDERED PARRAKEET.

Psephotus chrysopterygius, Gould in Proc. of Zool. Soc., part xxv. p. 220.

Psephotus chrysopterygius, Gould, *Birds of Australia*, fol., Supplement, pl.

One of the greatest pleasures enjoyed by the late celebrated botanist Robert Brown, during the last thirty years of his life, was now and then to show me the drawing of a Parrakeet made by one of the brothers Bauer, from a specimen procured somewhere on the north coast of Australia, but of which no specimen was preserved at the time, and none had been sent to England, until several were brought home by Mr. Elsey, a year or two prior to Mr. Brown's death. On comparing these with the drawing made at least forty years before, no doubt remained on my mind as to its having been made from an example of this species. This, then, is one of the novelties for which we are indebted to the explorations of A. C. Gregory, Esq.; and I trust it may not be the last I shall have to characterize through the researches of this intrepid traveller. Mr. Elsey, who, as is well known, accompanied the expedition to the Victoria River, obtained three examples—a male, a female, and a young bird—all of which are now in our national collection. In the notes accompanying the specimens, Mr. Elsey states that they were procured on the 14th of September, 1856, in lat. 18° S. and long. $141^{\circ} 33'$ E., and that their crops contained some monocotyledonous seeds.

This bird, which is in every respect a true *Psephotus*, is allied both to the *P. pulcherrimus* and *P. multicolor*, but differs

from them, among other characters, in the rich yellow mark on the shoulder.

The male has a band across the forehead, extending above the eye to its posterior angle, of a very pale yellow ; on the centre of the crown a patch of black ; sides of the head, cheeks, neck, throat, upper portion of the abdomen, lower part of the back, rump, and upper tail-coverts verditer blue, tinged with green on the cheeks and upper tail-coverts ; immediately below the eye a wash of yellow ; back of the neck, back, and scapularies light greyish brown, slightly tinted with green ; shoulder and lesser wing-coverts fine yellow ; primaries and secondaries black, margined externally with blue ; feathers of the lower part of the abdomen, vent, and under tail-coverts light scarlet, margined with greyish green ; two centre tail-feathers dark green at the base, passing into deep blue towards the extremity, and tipped with dull black ; the remaining tail-feathers light green crossed by an irregular oblique band of dull bluish black, beyond which they become of a paler glaucous green, until they end in white ; but each has a dark stain of bluish green on the outer margin near the tip ; irides brown ; bill and nostrils bluish horn-colour ; feet mealy grey.

Total length 11 inches ; bill $\frac{3}{8}$; wing $4\frac{1}{4}$; tail 7 ; tarsi $\frac{1}{2}$.

The female is similar to the male in colour, but all the hues much paler, and the markings much less strongly defined.

In the young state the whole of the head, all the upper surface, wing-coverts, throat, and breast are of a pale glaucous green ; the rump and upper tail-coverts and the tail similar to the same parts in the male, but not so bright ; and the lower part of the abdomen is greyish white, with faint stains of scarlet.

Sp. 429. PSEPHOTUS PULCHERRIMUS, *Gould*.

BEAUTIFUL PARRAKEET.

Platycercus pulcherrimus, Gould in Ann. and Mag. of Nat. Hist.,
vol. xv. p. 114.

Psephotus pulcherrimus, Gould, Birds of Australia, fol, vol. v.
pl. 34.

The graceful form of this Parrakeet, combined with the extreme brilliancy of its plumage, renders it one of the most lovely of the *Psittacidæ* yet discovered; and in whatever light we regard it, whether as a beautiful ornament to our cabinets or a desirable addition to our aviaries, it is still an object of no ordinary interest.

Little more is at present known respecting this bird than that it is an inhabitant of the upland grassy plains of Queensland. Specimens were procured by Gilbert on the Darling Downs, where it was observed in small families feeding on the seeds of grasses and other plants growing on the plains; the stomachs of those examined were fully distended with grass seeds exclusively.

The sexes are much alike in plumage; but the female is less brilliantly coloured and somewhat smaller than the male.

Band across the forehead scarlet, fading around the eyes, lores, and cheeks into pale lemon-yellow, which again gradually blends with the green of the under surface; crown of the head and nape blackish brown; sides of the neck to the shoulders verdigris-green with yellowish reflexions; back greyish brown; rump and upper tail-coverts verditer-blue, the longer coverts with a band of black at their extreme tip; primaries and secondaries black, edged with bluish green; shoulders with a spot of rich vermilion; under wing-coverts and edges of the pinions verditer-blue; two middle tail-feathers olive brown at the base, gradually passing into greenish blue at the tip with olive reflexions; the three

outer feathers on each side with a narrow zigzag band of black at about half their length from the base, then greenish blue to the tip, the inner webs fading into white near the extremity; throat and chest yellowish emerald-green, each feather tipped with verditer-blue; middle of the breast and the sides verditer-blue; abdomen and under tail-coverts scarlet; irides dark brown; bill horn-colour, becoming blackish grey at the base; legs and feet yellowish brown.

Total length 12 inches; bill $\frac{1}{2}$; wing $5\frac{1}{4}$; tail $7\frac{1}{2}$; tarsi $\frac{5}{8}$.

Sp. 430. PSEPHOTUS MULTICOLOR.

VARIED PARAKEET.

Psittacus multicolor, Temm. in Linn. Trans., vol. xii. p. 119.

Varied Parrot, Lath. Gen. Hist., vol. ii. p. 182.

Platycercus multicolor, Vig. and Horsf. in Linn. Trans., vol. xv. p. 283.

Psephotus multicolor, Gould, *Birds of Australia*, fol., vol. v. pl. 35.

The natural home of this bird is the interior of Australia, where it is abundant, particularly on the plains bordering the Lachlan, the Upper Murray and the Darling. It is a true *Psephotus*, and is closely allied to *P. hæmatonotus*, but differs from that and the other species of the genus in the bands of colour which ornament the head, wings and rump; it is a species I did not meet with myself, and of which no information has been given by those travellers who have visited its habitat.

Much variation is found to exist in the colouring of this bird; some individuals having the band across the wing-coverts bright yellow, while in others the same part is tinged with red.

The adult male has the forehead and shoulders sulphur-yellow; under tail-coverts citron-yellow; rump crossed by three distinct bands of yellowish green, dark green and reddish chestnut; occiput reddish chestnut; base of the primaries, secondaries and spurious wing, and the under wing-

coverts rich deep blue ; lower part of the abdomen and thighs scarlet ; middle tail-feathers blue ; the outer ones bluish green, passing into very pale blue at their tips ; all the tail-feathers, except the four middle ones, crossed by a band of black near the base ; remainder of the plumage deep grass-green ; bill horny brown ; legs wood-brown.

The female is attired in a similar style of colours, but is much less brilliant, has the throat and breast yellowish brown, and only an indication of the bands on the occiput and wing-coverts.

Sp. 431. PSEPHOTUS HÆMATONOTUS, *Gould*.

RED-RUMPED PARRAKEET.

Platycercus hæmatonotus, Gould in Proc. of Zool. Soc., part v. p. 151.

Psephotus hæmatonotus, Gould, *Birds of Australia*, fol., vol. v. pl. 36.

This species inhabits the interior of the south-eastern division of the Australian continent ; it is abundantly dispersed over the Liverpool Plains, and all the open country to the northward as far as it has yet been explored ; it also inhabits similar tracts of country in Victoria and South Australia ; on the plains around Adelaide it is seldom seen, but as the traveller advances towards the interior every succeeding mile brings him in contact with it in greater numbers. It is more frequently seen on the ground than among the trees ; and it evidently gives a decided preference to open grassy valleys and the naked crowns of hills, rather than to the wide and almost boundless plain. During winter it associates in flocks, varying from twenty to a hundred in number, which trip nimbly over the ground in search of the seeds of grasses and other plants, with which the crops of many that were shot were found to be distended. In the early morning, and not unfrequently in other parts of the day, I have often seen hundreds perched together on some leafless limb of a *Eucalyptus*, sitting

in close order along the whole length of the branch, until hunger prompted them to descend to the feeding-ground, or the approach of a hawk caused them to disperse. Their movements on the ground are characterized by much grace and activity, and although assembled in one great mass running over the ground like Plovers, they are generally mated in pairs,—a fact easily ascertained by the difference in the colouring of the sexes; the rich red mark on the rump of the male appearing, as the bright sun shines upon it, like a spot of fire.

This bird has a pleasing whistling note, almost approaching to a song, which is poured forth both while perching on the branches of the trees and while flying over the plains. The eggs, which are white and five or six in number, eleven lines long by eight and a half lines broad, are deposited without any nest in the spouts and hollows of the gum-trees.

Crown of the head, back of the neck, cheeks and chest emerald-green, which is lightest on the forehead and cheeks; back brownish green; rump scarlet; tip and under surface of the shoulder, spurious wing, and the outer edge of the basal half of the primaries rich ultramarine blue; the blue of the shoulder above passing into sulphur-yellow, and forming a conspicuous spot of the latter colour in the centre of the shoulder; greater and lesser wing-coverts and secondaries bluish green; upper tail-coverts and two centre tail-feathers green, passing into blue towards the tip, which is blackish brown; the remainder of the tail-feathers green at the base gradually passing into delicate greyish white on the inner webs and the tips; centre of the abdomen yellow; thighs dull bluish green; under tail-coverts greyish white; bill horn-colour; feet brown; irides pale brown.

The young male of the year differs from the adult in having those parts delicate greenish grey which in the latter are emerald-green; in being destitute of the red colouring of the rump, and of the yellow on the centre of the abdomen; and

in having the bases of the secondaries and some of the primaries white.

Total length 11 inches; wing 5; tail $6\frac{1}{2}$; tarsi $\frac{5}{8}$.

Genus EUPHEMA, *Wagler*.

The members of this genus are exclusively Australian, and appear to be confined to the extra-tropical parts of the country, no species having yet been seen from the north coast, while the seven species known are abundantly distributed over the southern portions of the continent, and two of them over Tasmania.

Sp. 432. EUPHEMA CHRYSOSTOMA.

BLUE-BANDED GRASS-PARRAKEET.

Psittacus chrysostomus, Kuhl, Consp. in Psitt. in Nova Acta, vol. x. p. 58, pl. 1.

Psittacus venustus, Temm. in Linn. Trans., vol. xiii. p. 121.

Blue-banded Parrakeet, Lath. Gen. Hist., vol. ii. p. 188.

Nanodes venustus, Vig. and Horsf. in Linn. Trans. vol. xv. p. 274.

Euphema chrysostoma, Wagl. Mon. Psitt. in Abhand., vol. i. pp. 492, 544, and 707.

Conurus chrysostomus, Bourj. de St.-Hil. Perr., tab. 10.

Euphema chrysostoma, Gould, Birds of Australia, fol., vol. v. pl. 37.

This bird is a summer resident in Tasmania, arriving in September and departing again in February and March. During its sojourn it takes up its abode in such open and thinly-timbered localities as are favourable for the growth of various kinds of grasses, upon the seeds of which it almost solely subsists. Among the places in which I observed it to be most abundant were Bruni Island, Sandby Bay immediately adjoining Hobart Town, New Norfolk, Spring Hill in the interior, the banks of the Tamar, and on Flinder's Island in Bass's Straits. As a matter of course it is also

found in Victoria, that country being in the direct line of its migration.

The Blue-banded Grass-Parrakeet is one of the most beautiful and interesting of the *Psittacidæ*; for whether perched on the small dead branches of a low bush, or resting upon the stronger grasses, there is grace and elegance in all its actions. It runs over the ground and threads its way among the grasses with the greatest facility, and the little flocks are usually so intent upon gathering the seeds, as to admit of your walking close up to them before they will rise; the whole will then get up simultaneously, uttering a feeble cry and settling again at a short distance, or flying off to some thickly-foliaged tree, where they sit for a time and again descend to the ground.

The breeding-season is at its height in October and November; the eggs are usually deposited in the holes of *Eucalypti*, but occasionally in the hollow trunks of fallen trees: they vary from five to seven in number, and are perfectly white.

The sexes present no observable difference; but the young, like those of the *Platycerci*, have the bill and nostrils of a delicate yellow, and the band on the forehead less conspicuous.

A conspicuous band of deep indigo-blue across the forehead, bordered above by a narrow edging of light metallic blue; lores, and a stripe behind the eye, rich yellow; crown of the head, back, rump, upper tail-coverts, throat, chest, and flanks brownish olive-green; shoulders and wing-coverts deep blue; primaries black, the outer edges of the first three or four slightly tinged with bluish green; centre of the abdomen and under tail-coverts yellow; four middle tail-feathers greenish blue; the basal portions of the remainder beautiful blue on their outer edges, and largely tipped with fine yellow; irides, bill, and feet brown.

Sp. 433. EUPHEMA ELEGANS, *Gould*.

ELEGANT GRASS-PARRAKEET.

Nanodes elegans, Gould in Proc. of Zool. Soc., part v. p. 25.

Gool-ye-der-ung, Aborigines of the lowlands of Western Australia.

Ground Parrakeet of the Colonists.

Euphema elegans, Gould, *Birds of Australia*, fol., vol. v. pl. 38.

Although closely resembling in size and form the Blue-banded Grass-Parrakeet, this species differs from it in several minor particulars. The green colouring of its plumage is of a more golden hue, and the blue frontal band extends behind the eye, while in the former it reaches no farther than the front: the difference in the colouring of the wing of the two species is also strongly marked, being wholly blue in one, while in the other the shoulders and the part near the scapularies are green.

As far as I could learn, the present species is never seen in Tasmania, while the Blue-banded is a constant summer visitant to that island; neither is it common in New South Wales, its visits to that country being apparently accidental. Its proper home is Western-Australia, over which country it is generally dispersed.

It appears to prefer the barren and sandy belts bordering the coast, but occasionally resorts to the more distant interior. Flocks were constantly rising before me while traversing the salt-marshes, which stretch along the coast from Holdfast Bay to the Port of Adelaide; they were feeding upon the seeds of grasses and various other plants, which were there abundant: in the middle of the day, or when disturbed, they retreated to the thick *Banksias* that grow on the sandy ridges in the immediate neighbourhood, and in such numbers, that I have seen those trees literally covered with them, intermingled with the orange-breasted species (*E. auran-tia*), which, however, was far less numerous. When they rise,

they spread out and display their beautiful yellow tail-feathers to the greatest advantage.

Gilbert informed me that, in Western Australia, "the elegant Grass-Parrakeet inhabits every variety of situation, but particularly where there is an abundance of grass, the seeds of which are its favourite food: it may be generally observed in small families, but at Kojenup, where there are several pools, and no other water for many miles round, I saw these birds in myriads; but although I shot a great many, they were nearly all young birds. Its flight is rapid and even, and frequently at considerable altitudes. The breeding-season is in September and October; the eggs being from four to seven in number," of a pure white, eleven lines long by eight and a half lines broad.

The sexes differ but little in their outward appearance; but the female is never so bright in her colouring, neither is she so large as the male.

A bar of deep indigo-blue across the forehead, bordered above by a narrow edging of light metallic blue, which is continued over the eye; lores rich yellow; head, cheeks, scapularies, back, and upper shoulders greenish blue; secondaries deep blue, edged with lighter; primaries black, the first three or four edged externally with greenish blue; tail-coverts golden olive-green; throat and chest greenish yellow, passing into bright yellow on the abdomen and under tail-coverts; the centre of the abdomen tinged with orange; two middle tail-feathers greenish blue, the remainder blue at the base, and largely tipped with yellow; irides very dark brown; bill dark brown, lighter on the under side; legs and feet dull brown.

Total length 9 inches; wing $4\frac{5}{8}$; tail $5\frac{1}{4}$; tarsi $\frac{1}{2}$.

Sp. 434. EUPHEMA AURANTIA, *Gould*.

ORANGE-BELLIED GRASS-PARRAKEET.

Euphema pulchella, p. Wagl. Mon. Psitt. p. 543.

———*aurantia*, Gould in Proc. of Zool. Soc., part viii. p. 148.

———*chrysogaster*, R. G. Gray, List of Spec. of Birds in Brit. Mus., part iii. sec. 11, *Psittacidæ*, p. 16.

Euphema aurantia, Gould, *Birds of Australia*, fol., vol. v. pl. 39.

Although the present bird is not so elegant in form, nor graced with so brilliant a frontal band as several others of the group, it has received an ample compensation in the rich orange mark that adorns the under surface, a character by which it may be distinguished from every other known species. Like the *Euphema chrysostoma*, it is a summer visitant to Tasmania. I observed it sparingly dispersed in the neighbourhood of Hobart Town and New Norfolk, but found it in far greater abundance on the Actæon Islands, at the entrance of D'Entrecasteaux Channel. These small and uninhabited islands are covered with grasses and scrub, intermingled with a species of Barilla, nearly allied to *Atriplex halimus*; and almost the only land-bird that enlivens these solitary spots, is the present beautiful Parrakeet: I frequently flushed small flocks from among the grass, when they almost immediately alighted on the Barilla bushes around me, their sparkling orange bellies forming a striking contrast with the green of the other parts of their plumage and the silvery foliage of the plant upon which they rested. I made many unsuccessful attempts to discover their breeding-places; as, however, these islands are destitute of large trees, I am induced to believe that they lay eggs in holes on the ground, or among the stones on the shore. On visiting South Australia in winter, I there found it equally abundant on the flat, marshy grounds bordering the coast, especially between the Port of Adelaide and Holdfast Bay.

It may be a casual visitor to New South Wales and Swan River, but I have not yet seen it in any collections from those parts of Australia.

Frontal band blue, margined before and behind with a very faint line of greenish blue; crown of the head and all the upper surface deep grass-green; shoulders, many of the secondaries, and outer edges of the primaries deep indigo-blue; lores, cheeks, and breast yellowish green, passing into greenish yellow on the abdomen and under tail-coverts, the centre of the abdomen being ornamented with a large spot of rich orange; two centre tail-feathers green; the next on each side blackish brown on the inner, and green on the outer webs; the remainder blackish brown on their inner and green on their outer webs, and largely tipped with bright yellow; irides very dark brown; bill dark brown, becoming lighter on the under side; legs and feet dull brown.

Total length $8\frac{1}{2}$ inches; wing $4\frac{1}{4}$; tail $4\frac{1}{4}$; tarsi $\frac{1}{2}$.

The female possesses the orange spot in common with the male, although, in her case, it is neither so extensive nor so brilliant.

Sp. 435. **EUPHEMA PETROPHILA**, *Gould*.

· **ROCK-PARRAKEET.**

Euphema petrophila, Gould in Proc. of Zool. Soc., part viii. p. 148.
Rock Parrakeet, Colonists of Swan River.

Euphema petrophila, Gould, *Birds of Australia*, fol., vol. v. pl. 40.

I have received specimens of this bird from Port Lincoln, in South Australia, but its principal habitat appears to be the western coast, where it occurs in great numbers on Rottnest and other islands near Swan River: "Here," says Gilbert, "it breeds in the holes of the most precipitous cliffs, choosing in preference those facing the water and most difficult of access; and hence it required no slight degree of exertion to

procure examples of the eggs, which, according to the testimony of the natives, are white, and seven or eight in number.

“Its flight is extremely rapid, and at times it mounts to a great height in the air.”

The sexes are nearly alike in colour, and may be thus described:—

Frontal band deep indigo-blue, bounded before and behind with a very narrow line of dull verditer-blue; lores and circle surrounding the eye dull verditer-blue; all the upper surface yellowish olive-green; under surface the same, but lighter, and passing into yellow, tinged with orange on the lower part of the abdomen; under surface of the shoulder indigo-blue; a few of the wing-coverts greenish blue; primaries brownish black on their inner webs, and deep indigo-blue on the outer; two centre tail-feathers bluish green; the remainder of the feathers brown at the base on the inner webs, green at the base on the outer webs, and largely tipped with bright yellow; irides very dark brown; upper mandible dark reddish brown; sides of the under mandible light yellow, the tip bluish grey; legs and feet dark brownish grey.

Total length 8 inches; wing $4\frac{1}{4}$; tail $4\frac{1}{2}$; tarsi $\frac{1}{2}$.

Sp. 436. EUPHEMA PULCHELLA.

CHESTNUT-SHOULDERED GRASS-PARRAKEET.

Psittacus pulchellus, Shaw, Nat. Misc., pl. 96.

— (*Conurus*) *pulchellus*, Kuhl, Consp. Psitt., pp. 8, 50.

La Perruche Edwards, Levaill. Hist. des Perr., p. 68, female.

Psittacus chrysogaster, Lath. Ind. Orn., vol. i. p. 97?

Orange-bellied Parrot, Lath. Gen. Syn., Supp. p. 62.

Orange-bellied Parrakeet, Shaw, Gen. Zool., vol. viii. p. 468.

Psittacus edwardsii, Bechst. in Lath. Uebers. der Vög., p. 74.

Nanodes pulchellus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 277.

Lathamus azureus, Less. Traité d'Orn., p. 205.

Euphema pulchella, Wagl. Mon. Psitt. in Abhand., pp. 493, 542.

Euphema pulchella, Gould, Birds of Australia, fol., vol. v. pl. 41.

All those who have traversed the “bush” in New South

Wales will recognize in this lovely species an old favourite, for it must have often come under their notice; during my own rambles in that country my attention was constantly attracted by its beautiful outspread tail and wings as it rose before me. Its sole food being the seeds of grasses and of the smaller annuals, it spends much of its time on the ground, and appears to evince a greater partiality for stony ridges than for the rich alluvial flats. When flushed it flies off to a short distance between the trees, perches on some dead branch and remains there until hunger impels it to return to the ground. I have never seen this bird congregated in large flocks like the *Euphema chrysostoma* and *E. elegans*; but usually met with it in small companies of six or eight in number.

I did not succeed in finding a nest of this species, though I doubt not that it was breeding in the district of the Upper Hunter at the time I visited it. Mr. Caley states, on the authority of the natives, that it lays eight white eggs in the hole of a tree.

The sexes differ so little in colour, that dissection must be resorted to to distinguish them.

Forehead, stripe over the eye, cheeks, shoulders, and lesser wing-coverts rich metallic greenish blue; crown of the head, back of the neck, upper surface, and flanks bright olive-green; a bright spot of chestnut-red at the insertion of the wings, primaries and secondaries deep blue on their outer webs, and blackish brown on the inner; chest, centre of the abdomen, and under tail-coverts rich yellow; four middle tail-feathers green, the remainder green at the base and largely tipped with yellow; bill and feet dark brown.

In size the *Euphema pulchella* is about the same as the Rock-Parrakeet, whose admeasurements are given on the preceding page.

Sp. 437. EUPHEMA SPLENDIDA, *Gould*.

SPLENDID GRASS-PARRAKEET.

Euphema splendida, Gould in Proc. of Zool. Soc., Part VIII. p. 147.

Euphema splendida, Gould, *Birds of Australia*, fol., vol. v. pl. 42.

It is a source of much regret to me, that I am unable to give more than a very slight notice of this beautiful bird. The specimen from which my description was taken came into my possession in 1840, unfortunately without any other information accompanying it than that it was a native of Swan River; from that period no other example occurred until 1845, when several were transmitted to me by the late Johnson Drummond, who had killed them near Moore's River in Western Australia. Captain Sturt obtained a male during one of his journeys into the interior of South Australia, and Mr. J. Gardner informs me that he has procured examples in the Murray scrub near the north-west band of that river, and has been told that it is found in the country bordering the head of St. Vincent's Gulf; he adds that it is of a very shy disposition, and nowhere very numerous.

The Splendid Grass-Parrakeet has many characters in common with the *E. pulchella*, but differs from that species in the entire absence of the chestnut mark on the shoulders, in the more intense blue of the face, and in the gorgeously rich scarlet colouring of the chest; and is rendered remarkably conspicuous by the brilliant display of the three primitive colours—blue, red and yellow—on its face, breast, and abdomen.

The male has the face and ear-coverts deep indigo-blue, becoming paler on the latter; all the upper surface grass-green; upper wing-coverts beautiful lazuline blue; under wing-coverts deep indigo-blue; primaries and secondaries black; the first three or four primaries slightly margined with green; two centre tail-feathers dark green; the remaining

tail-feathers black on the internal webs, green on the external webs and largely tipped with bright yellow, which increases in extent as the feathers recede from the centre ; chest rich deep scarlet ; under surface yellow, passing into green on the sides of the chest and flanks.

Total length 8 inches ; wing $4\frac{1}{2}$; tail $4\frac{1}{2}$; tarsi $\frac{1}{2}$.

The female differs in having the face and wing-coverts, both above and beneath, of a pale lazuline blue, and in the chest being green instead of scarlet.

Sp. 438.

EUPHEMA BOURKII.

BOURKE'S GRASS-PARRAKEET.

Nanodes bourkii, Mitch. Australian Expeditions, vol. i. p. xviii.

Euphema bourkii, Gould, Birds of Australia, fol., vol. v. pl. 43.

For a knowledge of this Grass-Parrakeet, we are indebted to the late Major Sir T. L. Mitchell, who discovered it on the banks of the River Bogan, during one of his expeditions into the interior of New South Wales. It is particularly interesting, as exhibiting, in the crescentic form of the markings on the back, an approach to the style of colouring observable in the single species of the genus *Melopsittacus* (*M. undulatas*) ; at the same time, in its structure it so closely assimilates to the form of the genus *Euphema*, that I have been induced to place it in that group.

I did not meet with it during my own expedition, nor could I gain any information whatever respecting it ; it is therefore another of those Australian birds to which I would direct the attention of the travellers who may hereafter visit the interior, over which it will doubtless prove to be widely spread, for Captain Sturt found it in abundance at the Dépôt in Central Australia.

Band across the forehead, shoulders above and beneath, secondaries and base of the primaries deep blue ; flanks and

under tail-coverts turquoise-blue ; all the upper surface dark olive-brown, the feathers of the wings edged with greyish white; centre of the abdomen salmon-red ; cheeks and the remainder of the under surface brown, strongly tinged with salmon-red; six middle tail-feathers deep brown, the external webs tinged with blue ; the three outer ones on each side brown at the base, with their external webs blue and the tips white ; bill dark horn-colour ; legs and feet brown.

Genus MELOPSITTACUS, *Gould*.

The only known species of this form is strictly gregarious, assembles in vast flocks, and is admirably adapted for plains and downs covered with grasses, upon the seeds of which it entirely subsists.

Sp. 439. MELOPSITTACUS UNDULATUS.

WARBLING GRASS-PARRAKEET.

Psittacus undulatus, Shaw, Nat. Misc., pl. 673.

Undulated Parrot, Lath. Gen. Hist., vol. ii. p. 179, pl. 26.

Nanodes undulatus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 277.

Euphema undulata, Wagl. Mon. Psitt. in Abhand., &c., pp. 493, 545, and 707.

Psittacus (*Conurus*) *undulatus*, Wagl. Mon. Psitt., pp. 8, 49.

Sagittifer minor undulatus, Bourj. de St.-Hil. Perr., tab. 8.

Canary Parrot of the Colonists of New South Wales.

Betcherrygah of the Natives of the Liverpool Plains.

Melopsittacus undulatus, Gould, Birds of Australia, fol., vol. v. pl. 44.

Among the numerous members of the *Psittacidæ* inhabiting Australia, this lovely little bird is preeminent both for beauty of plumage and elegance of form, which, together with its extreme cheerfulness of disposition and sprightliness of manner, render it an especial favourite with all who have had an opportunity of seeing it alive ; the more so as this animated dis-

position is as conspicuous in confinement as in its native wilds.

In all probability it is generally dispersed over the central parts of Australia ; in the whole of the southern portion it is migratory, appearing in large flocks in spring, when the grass-seeds are plentiful, and retiring again after the breeding-season is over to more northern latitudes.

On arriving at Brezi, to the north of the Liverpool Plains, in the beginning of December, I found myself surrounded by numbers, breeding in all the hollow spouts of the large *Eucalypti* bordering the Mokai ; and on crossing the plains between that river and the Peel, in the direction of the Turi Mountain, I saw them in flocks of thousands. Their flight is remarkably straight and rapid, and is generally accompanied by a screeching noise. During the heat of the day, when flocks of them are sitting motionless among the leaves of the gum-trees, they are with difficulty detected.

The breeding-season is at its height in December, and by the end of the month the young are generally capable of providing for themselves. The eggs are three or four in number, pure white, nine lines long by seven lines in diameter, and are deposited in the holes and spouts of the gum-trees without any nests.

As cage-birds they are as interesting as can possibly be imagined ; for, independently of their highly ornamental appearance, they are constantly coquetting, squabbling, and assuming every variety of graceful position. Their inward song, which cannot well be described, is unceasingly warbled forth from morn to eve, and is even continued throughout the night if they are placed in a room where an animated conversation is carried on ; indeed I am unacquainted with any Australian species which has been brought to England, that has contributed so much to the pleasure of those who keep living birds. I believe I was one of the first who introduced living examples to this country, having succeeded in

bringing home several on my return in 1840. Since that period nearly every ship coming direct from the southern parts of Australia has added to the numbers of this bird in England; and I have more than once seen two thousand at a time in a small room at a dealer's in Wapping.

The bird has also bred here as readily as the Canary; still it is one which cannot be naturalized in a wild state, our climate not having the requisite degree of warmth, nor the country producing the kind of food suited to it.

In a state of nature they feed exclusively upon grass-seeds, with which their crops are always found crammed: in confinement they thrive equally well upon canary seed.

The sexes are precisely alike in the colouring and marking of their plumage; but the female is somewhat smaller than the male, and has the colouring round the nostrils of a lighter tint.

The adults have the forehead and crown straw yellow; the remainder of the head, ear-coverts, nape, upper part of the back, scapularies and wing-coverts pale greenish yellow, each feather having a crescent-shaped mark of blackish brown near the extremity, these marks being numerous and minute on the head and neck; wings brown; the outer webs of the feathers deep green, margined with greenish yellow; face and throat yellow, ornamented on each cheek with a patch of rich blue, below which are three circular drops or spots of bluish black; rump, upper tail-coverts, and all the under surface bright green; two centre tail-feathers blue; the remaining tail-feathers green, crossed in the middle by an oblique band of yellow; irides straw white; nostrils bright blue in some, greenish blue and brown in others; legs pale bluish lead-colour.

The young are distinguished from the adults by the crown of the head, which is yellow in the adult, being crossed by numerous fine bars of brown, and by the absence of the deep blue spots on the throat.

Genus CALOPSITTA, *Lesson*.

Like *Melopsittacus*, there is only one species known of this genus. It is strictly Australian, and will doubtless hereafter be found to be universally distributed over that vast country ; it is equally well adapted for the plains as the last-mentioned species, and the two birds are frequently found associated.

Sp. 440. CALOPSITTA NOVÆ-HOLLANDIÆ.

COCKATOO-PARRAKEET.

Psittacus novæ-hollandiæ, Lath. Ind. Orn., vol. i. p. 102.

Palæornis novæ-hollandiæ, Vig. in Lear, Ill. Psitt. Pl. 27.

Nymphicus novæ-hollandiæ, Wagl. Mon. Psit. in Abhand., pp. 490, 522.

Leptolophus auricomis, Swains. Zool. Ill. 2nd Ser. Pl. 112.

Calopsitta guy, Less., Ill. Zool. Pl. 49.

—— *novæ-hollandiæ*, G. R. Gray, List of Gen. of Birds, 1855, p. 85.

Nymphicus novæ-hollandiæ, Gould, Birds of Australia, fol., vol. v. pl. 45.

The range of this beautiful species extends over the whole of the southern portion of the country, and the bird being strictly migratory it makes a simultaneous movement southward to within one hundred miles of the coast in September, arriving in the York district of Western Australia precisely at the same time that it appears on the Liverpool Plains in the eastern portion of the country. After breeding and rearing a numerous progeny, the whole again retire northwards in February and March, but to what degree of latitude towards the tropics they wend their way I have not been able satisfactorily to ascertain. It would appear to be more numerous in the eastern division of Australia than in the western. During the summer of 1839 it was breeding in all the apple-tree (*Angophora*) flats on the Upper Hunter, as well as on all similar districts on the Peel, and other rivers which flow to the north-west. I have seen the ground quite covered by them

while engaged in procuring food, and it was not an unusual circumstance to see hundreds together on the dead branches of the gum-trees in the neighbourhood of water, a plentiful supply of which would appear to be essential to their existence.

The flight of the Cockatoo-Parrakeet is even and easy, and is capable of being long protracted. When it rises from the ground it flies up into the nearest tree, almost invariably selecting a dead branch, upon which it frequently perches lengthwise. It is by no means a shy bird; and from the circumstance of its being excellent eating, many are killed for this purpose by persons leading a bush life.

It breeds in the holes of gum and other trees growing in the neighbourhood of water. The eggs are white, five or six in number, one inch long by three quarters of an inch broad.

Considerable difference exists in the plumage of the sexes, the tail-feathers of the male being entirely destitute of the transverse bars which adorn those of the other sex.

The male has the forehead, crest and cheeks lemon yellow; ear-coverts rich reddish orange; back of the neck, two centre tail-feathers, and the external margins of the primaries brownish grey; back, shoulders, all the under surface and outer tail-feathers greyish chocolate brown, the shoulders and flanks being the darkest; a white mark extends from the shoulders lengthwise down the centre of the wing; irides dark brown; bill bluish lead-colour, light on the under side of the lower mandible; legs and feet bluish grey.

The female differs from the male in the colour of the face and crest being of a dull olive yellow, the latter becoming still darker at its extremity; in having the throat greyish brown, and the back lighter than in the male; the lower part of the abdomen, upper tail-coverts, yellow; four middle tail-feathers grey, the remainder yellow, the whole transversely and irregularly barred with lines of brown, with the exception of the outer web of the outer feather on each side, which is pure yellow.

Genus PEZOPORUS, *Illiger*.

Of this terrestrial form but one species is known, which is very generally distributed over the temperate portions of Australia, the islands in Bass's Straits, and Tasmania.

Sp. 441. PEZOPORUS FORMOSUS.

GROUND-PARRAKEET.

Psittacus formosus, Lath. Ind. Orn., vol. i. p. 103.

—— *terrestris*, Shaw, Mus. Lev., p. 217, pl. 53.

—— (*Conurus*) *formosus*, Kuhl. Consp. Psitt., pp. 7, 43.

Perruche ingambé, Le Vaill. Hist. Nat. des Perr., tom. i. p. 66, pl. 32.

Pezoporus formosus, Ill. Prod. Syst. Mamm. et Av., p. 201.

—— *rufifrons*, Bourj. de St.-Hil. Supp. to Le Vaill. Hist. Nat. des Perr., pl. 9.

Boo''-run-du''-dee, Aborigines northward of Perth in Western Australia.

Dja''-doon-gu''-ree, Aborigines around Perth.

Djul-bat-la, Aborigines southward of Perth.

Ky-lo''-ing, Aborigines of King George's Sound.

Goolingnang, Aborigines near Sydney, New South Wales.

Swamp-Parrakeet, Colonists of Tasmania.

Ground-Parrakeet, Colonists of New South Wales and Western Australia.

Pezoporus formosus, Gould, Birds of Australia, fol., vol. v. pl. 46.

The Ground-Parrakeet is diffused over the whole of the southern portions of Australia, including Tasmania, wherever localities exist suitable to its habits. I also procured both adults and young on Flinder's Island, where I found them breeding on the grassy plains which cover the greater portion of that island. So far as I could learn, it is everywhere a stationary species. Having very frequently met with it in a state of nature, I am enabled to state that in its actions it differs from every other known species of its family. Whether the power of perching is entirely denied to it or not I am uncertain, but I never saw it fly into a tree, nor could I ever

force it to take shelter on the branches. It usually frequents either sandy sterile districts covered with tufts of rank grass and herbage, or low swampy flats abounding with rushes and the other kinds of vegetation peculiar to such situations. From its very recluse habits and great powers of running it is seldom or ever seen until it is flushed, and then only for a short time; as it soon pitches again and runs off to a place of seclusion. On the approach of danger it crouches on the earth or runs stealthily through the grasses, and, from the strong scent it emits, dogs road and point as dead to it as they do to ordinary game-birds; consequently, when shooting over swampy land in Australia, the sportsman is never certain whether a parrakeet, a quail, or a snipe will rise to the point of his dog. It flies with great rapidity, frequently making several zigzag turns in the short distance of a hundred yards, which it seldom exceeds without again pitching to the ground. Its flesh is excellent, being delicate in flavour, and equalling, if not surpassing, that of the quail and snipe. Its five or six white eggs, are deposited on the bare ground.

Plumage of the upper surface dark grass-green, each feather crossed by irregular bands of black and yellow; feathers of the crown and nape with a broad streak of black down the centre; forehead scarlet; throat, neck, and breast pale yellowish green, passing into bright greenish yellow on the abdomen and under tail-coverts, crossed by numerous irregular waved blackish bands; primaries and spurious wings green on their outer webs and dark brown on the inner, each of the latter with a triangular spot of pale yellow near the base; four centre tail-feathers green, crossed by numerous narrow bars of yellow; lateral tail-feathers yellow, crossed by numerous bars of deep green; irides black, with a fine ring of light grey; feet and legs bluish flesh-colour; claws very much lengthened, and of a blackish brown.

The young assume the colouring of the adult at a very

early age, and the sexes offer no external difference by which they can be distinguished.

Genus GEOPSITTACUS, *Gould*.

Of this form only a single species and a single example is known ; nothing has at present been ascertained of its habits.

Sp. 442. GEOPSITTACUS OCCIDENTALIS, *Gould*.

WESTERN GROUND-PARRAKEET.

Geopsittacus occidentalis, Gould in Proc. of Zool. Soc., 1861, p. 100.

I have had in my possession for many years the skin of a Parrakeet, which was sent to me direct from Perth, in Western Australia, and which differs, in my opinion, both generically and specifically from every other known species. In general appearance, and especially in its colouring, it resembles the *Pezoporus formosus* ; but, on carefully comparing it with that species, some remarkable differences are apparent. In *Pezoporus* the proportions of the head, bill, body, wings, and tail are evenly balanced, the legs are especially adapted for running over the ground, and the claws, particularly that of the outer hind toe, are remarkably long ; while, in the bird under consideration, the head is disproportionately large, the mandibles short and robust, the nostrils high and round, the tarsi and toes short and delicate, and the nails unusually diminutive when compared with those of other Parrakeets ; to complete the differences seen in this anomalous bird, the wings are large and long, while the tail is very short. The whole contour of *Pezoporus* is graceful and elegant ; the present bird, on the other hand, is short and dumpy, and much reminds me of a diminutive *Strigops*.

I need scarcely add how desirable it is that additional examples of this bird should be procured by those who may have favourable opportunities for so doing.

I have considered it advisable to give this bird a generic appellation distinct from *Pezoporus*; ornithologists can adopt it or not as they please.

All the upper surface grass-green, each feather crossed by irregular bands of black and greenish yellow; feathers of the crown and nape with a streak of black down the centre; throat and breast yellowish green, passing into sulphur-yellow on the abdomen; spurious wings brown; primaries and secondaries brown, narrowly fringed with a greenish hue on their external webs, with the exception of the first three; the primaries and secondaries have also an oblique mark of yellow near their bases, which mark increases in breadth and in depth of colour as the feathers approach the body; two centre tail-feathers dark brown, toothed on the edge of both webs with greenish yellow; the next on each side dark brown, toothed on the other web only with brighter and longer marks of yellow; the remainder dark brown, crossed by bands of yellow, which in some cases are continuous across both webs, and in others alternate; under tail-coverts sulphur-yellow, crossed on their outer webs with narrow oblique and irregular bands of blackish brown; bill horn; feet fleshy.

Total length 10 inches; bill $\frac{1}{2}$; wing $5\frac{1}{2}$; tail 5; tarsi $\frac{7}{8}$.

Genus LATHAMUS, *Lesson*.

The single species known of this form has been assigned to a different genus by almost every writer on ornithology, Vigors and Horsfield placing it in their genus *Nanodes*, Wagler in his genus *Euphema*; but Lesson, perceiving that it did not belong to either of those forms, made it the type of his genus *Lathamus*.

Having had ample opportunities of observing the bird in a state of nature, I concur in the propriety of separating it into a distinct genus; in its whole economy it is most closely allied to the *Trichiglossi*, and in no degree related to the *Euphemæ*.

Sp. 443. LATHAMUS DISCOLOR.

SWIFT LORIKEET.

Psittacus discolor, Shaw, in White's Voy., pl. in p. 263.

Red-shouldered Parrakeet, Phill. Bot. Bay, pl. in p. 269.

Psittacus humeralis, Kuhl. Consp. Psitt. in Nova Acta, vol. x. p. 47.

Psittacus australis, Ibid., p. 48.

— *Lathamii*, Bechst. Lath. Uebers. der Vög. p. 81.

Perruche Banks, Le Vaill. Hist. des Perr., p. 104, pl. 50.

Nanodes discolor, Vig. and Horsf. in Linn. Trans., vol. xv. p. 276.

Euphema discolor, Wagl. Mon. Psitt. in Abhand., vol. i. pp. 492 and 545.

Psittacus banksianus, Vieill. Nouv. Dict. d'Hist. Nat., tom. xxv. p. 342.

Lathamus rubifrons, Less. Traité d'Orn., p. 205.

La Perruche Latham, Le Vaill. Hist. des Perr., p. 123, pl. 62, young.

Psittacus discolor, Kuhl, Consp. in Nov. Acta, vol. x. p. 48, young.

Trichoglossus discolor, G. R. Gray, List. of Spec. of Birds in Brit. Mus. part iii. sec. ii. p. 63.

Swift Parrakeet, Colonists of Tasmania.

Lathamus discolor, Gould, Birds of Australia, fol., vol. v. pl. 47.

This elegant Lorikeet is a migratory species, passing the summer and breeding-season only in the more southern parts of the Australian continent and Tasmania, and retiring northward for the remainder of the year. During September and the four following months, it is not only abundant in all the gum-forests of Tasmania, but is very common in the shrubberies and gardens at Hobart Town. It is frequently to be seen on the gum-trees bordering the streets, within a few feet of the heads of the passing inhabitants, and so intent upon gathering the honey from the fresh-blown flowers which daily expand, as almost entirely to disregard their presence. The tree to which it is so eagerly attracted is the *Eucalyptus gibbosus*, cultivated specimens of which appear to have finer blossoms than those in their native forests. It is certainly the finest of the *Eucalypti* I have ever seen, and when its pendent branches are covered with thick clusters of pale yellow blos-

soms, presents a most beautiful appearance ; these blossoms are so charged with saccharine matter, that the birds soon fill themselves with honey, even to their very throats : several of those I shot, upon being held up by the feet, discharged from their mouths a stream of this liquid to the amount of a dessert-spoonful. Small flocks of from four to twenty in number are also frequently to be seen passing over the town, chasing each other, like the Swift of Europe, whence in all probability has arisen its colonial name. Sometimes these flights appear to be taken for the sake of exercise, or in the mere playfulness of disposition, while at others the birds are passing from one garden to another, or proceeding from the town to the forests at the foot of Mount Wellington, or *vice versâ*. Their plumage so closely assimilates in colour to the leaves of the trees they frequent, and they moreover creep so quietly yet actively from branch to branch, clinging in every possible position, that were it not for their movements and the trembling of the leaves, it would be difficult to perceive them without a minute examination of the tree upon which they have alighted. I found them breeding about midway between Hobart Town and Brown's River, but was not fortunate enough to obtain their eggs, in consequence of their being laid in holes of the loftiest and most inaccessible trees ; they are said to be two in number, and perfectly white.

The only part of New South Wales in which I have observed this bird was the district of the Upper Hunter, through which it periodically passes during the months of February and March.

In its actions and manners it is closely allied to the *Trichoglossi*, but differs from them in some few particulars, which are more perceptible in captivity than in a state of nature ; it has neither the musky smell nor the jumping motions of the *Trichoglossi*. I have never observed it to alight upon the ground, or elsewhere than among the branches.

The sexes are very similar in colour, but the female may

always be distinguished from the male by being much smaller in size and less brilliant in all her markings. The young at an early age assume the plumage of the adult, after which they undergo no change.

Face scarlet, with a spot of yellow at the gape ; crown of the head deep blue ; all the upper and under surface green, the latter being somewhat the lightest ; shoulders, under wing- and under tail-coverts scarlet ; secondaries and wing-coverts bluish green ; primaries deep blackish blue, finely margined with yellow ; tail deep blue, tinged with red, passing into black at the extremity ; irides rich hazel-yellow ; feet flesh-brown ; bill horn-colour.

Genus TRICHOGLOSSUS, *Vigors and Horsfield.*

This arboreal group of Honey-eating Lorikeets, if not so numerous in species as the seed-feeding Parrakeets, is individually as abundant, and more universally dispersed, being found in every part of the country yet visited. Other members of the genus are found also in New Guinea and the Moluccas.

In their structure, habits, food, and mode of nidification, no two groups of the same family can be more widely different than these forms ; the pencilled tongue, diminutive stomach, thick skin, tough flesh, and foetid odour of the *Trichoglossi* presenting a decided contrast to the simple tongue, capacious crop and stomach, thin skin, delicate flesh, and freedom from odour of the *Platycerci* : besides which, the *Trichoglossi* possess a strong *os furcatorium*, which bone is wanting in the *Platycerci* ; hence, while the *Trichoglossi* are powerful, swift, and arrow-like in their flight, the *Platycerci* are feeble, pass through the air in a succession of undulations near the ground, and never fly to any great distance. The mode in which the two groups approach, alight upon, and quit the trees is also remarkably different ; the *Trichoglossi* dashing

among and alighting upon the branches simultaneously, and with the utmost rapidity, and quitting them in like manner, leaving the deafening sound of their thousand voices echoing through the woods; while the *Platycerci* rise to the branch after their undulating flight, and leave them again in a quiet manner, no sound being heard but their inward piping note.

The eggs of the *Trichoglossi* are from two to four in number; those of the *Platycerci* are more numerous.

Sp. 444. TRICHOGLOSSUS MULTICOLOR.

BLUE-BELLIED LORIKEET.

Psittacus novæ-hollandiæ, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 316.

—— *multicolor*, Gmel. Ib., p. 328.

—— *semicollaris*, Lath. Ind. Orn., tom. i. p. 103.

—— *cyanogaster*, Shaw, Gen. Zool., vol. viii. p. 413.

—— (*Conurus*) *hæmatopus*, Kuhl, Consp. Psitt., pp. 6, 34.

—— *hæmatopus*, Hahn. Papag., tab. 3.

—— *hæmatodus*, Vig. and Horsf. in Linn. Trans., vol. xv. p. 289.

Trichoglossus multicolor, Wagl. Mon. Psitt., p. 553.

—— *swainsonii*, Jard. and Selby, Ill. Orn., pl. 112.

—— *hæmatopus*, Steph. Cont. of Shaw's Gen. Zool., vol. xiv. p. 129.

Australasia novæ-hollandiæ, Less. Traité d'Orn., p. 209.

Blue-bellied Parrot, White's Voy., pl. in p. 140.

War-rín, Aborigines of New South Wales.

Trichoglossus swainsonii, Gould, Birds of Australia, fol., vol. v. pl. 48.

This beautiful Lorikeet, so far as is yet known, is almost exclusively an inhabitant of that portion of the Australian continent lying between South Australia and Moreton Bay; at least I have never heard of its existence in any part westward of the former or northward of the latter. It also occurs in Tasmania, but its visits to that island do not appear to be either regular or frequent.

The flowers of the various species of *Eucalypti* furnish this bird with an abundant supply of food, and so exclusively is it

confined to the forests composed of those trees, that I do not recollect to have met with it in any other. However graphically it might be described, I scarcely believe it possible to convey an idea of the appearance of a forest of flowering gums tenanted by *Trichoglossi*; three or four species being frequently seen on the same tree, and often simultaneously attacking the pendant blossoms of the same branch. The incessant din produced by their thousand voices, and the screaming notes they emit when a flock of either species simultaneously leave the trees for some other part of the forest, is not easily described, and must be seen and heard to be fully comprehended. So intent are they for some time after sunrise upon extracting their honey-food, that they are not easily alarmed or made to quit the trees upon which they are feeding. The report of a gun discharged immediately beneath them has no other effect than to elicit an extra scream, or cause them to move to a neighbouring branch, where they again recommence feeding with avidity, creeping among the leaves and clinging beneath the branches in every variety of position. During one of my morning rambles in the brushes of the Hunter, I came suddenly upon an immense *Eucalyptus*, which was at least two hundred feet high. The blossoms of this noble tree had attracted hundreds of birds, both Parrots and Honey-suckers; and from a single branch I killed the four species of the former inhabiting the district, viz. *Trichoglossus multicolor* and *T. chlorolepidotus*, *Glossopsitta australis*, and *G. pusilla*. I mention this fact in proof of the perfect harmony existing between these species while feeding; a night's rest, however, and the taming effect of hunger doubtless contributed much to this harmonious feeling, as I observed that at other periods of the day they were not so friendly.

Although the *T. multicolor* is so numerous in New South Wales, I did not succeed in procuring its eggs; the natives informed me that they are two in number, and that they are deposited in the holes of the largest *Eucalypti*, the period of incubation being from September to January.

Head, sides of the face, and throat blue, with a lighter stripe down the centre of each feather; across the occiput a narrow band of greenish yellow; all the upper surface green, blotched at the base of the neck with scarlet and yellow; wings dark green on their outer webs; their inner webs black, crossed by a broad oblique band of bright yellow; tail green above, passing into blue on the tips of the two central feathers; under surface of the tail greenish yellow; chest crossed by a broad band, the centre of which is rich scarlet, with a few of the feathers fringed with deep blue, and the sides being rich orange-yellow, margined with scarlet; under surface of the shoulder and sides of the chest deep blood-red; abdomen rich deep blue, blotched on each side with scarlet and yellow; under tail-coverts rich yellow, with an oblong patch of green at the extremity of each feather; bill blood-red, with the extreme tip yellow; nostrils and bare space round the eye brownish black; irides reddish orange, with a narrow ring of dark brown next the pupil; feet olive.

The sexes resemble each other so closely both in size and colouring that they cannot be distinguished with certainty.

Sp. 445. **TRICHOGLOSSUS RUBRITORQUIS,**

Vig. and Horsf.

RED-COLLARED LORIKEET.

Trichoglossus rubritorquis, Vig. and Horsf. in Linn. Trans., vol. xv. p. 291.

Trichoglossus rubritorquis, Gould, *Birds of Australia*, fol., vol. v. pl. 49.

This lovely *Trichoglossus* inhabits the northern coasts of Australia, and is as beautiful a representative of its near ally, the *T. multicolor* of the south coast, as can well be imagined. In their habits and economy also the two birds so closely approximate that a description of one will serve for both. Independently of the richer blue of the head, the red nuchal

collar and dull blackish olive mark on the abdomen are marks by which it may readily be distinguished.

Gilbert remarks, that "this species is abundant in all parts of the Cobourg Peninsula and the adjacent islands, and is an especial favourite with the natives, who carefully preserve the heads of all they kill, for the purpose of ornamenting their persons by slinging them to the arm a little above the elbow. It is generally seen in large flocks, feeding on the summits of the loftiest trees. Its flight is rapid in the extreme. Like the other *Trichoglossi*, its food consists of honey and the buds of flowers.

The sexes present very little difference in appearance.

Head and cheeks resplendent blue; throat and abdomen deep olive-green; chest crossed by a broad band of orange-red; a narrow band of the same colour across the occiput, below which band is a broader one of deep blue, the basal portion of the feathers being red; back, wings, tail, and under tail-coverts grass-green; basal half of the inner webs of the primaries yellow; irides red, with a narrow ring of yellowish round the pupil; bill vermilion; tarsi silken green in front; inside of the feet and back of the tarsi ash-grey.

Sp. 446. TRICHOGLOSSUS CHLOROLEPIDOTUS.

SCALY-BREASTED LORIKEET.

Psittacus chlorolepidotus, Kuhl, Consp. Psitt. in Nov. Acta, vol. x. p. 48.

Trichoglossus matoni, Vig. and Horsf. in Linn. Trans., vol. xv. p. 292.

— *chlorolepidotus*, Wagl. Mon. Psitt. in Abhand., p. 550.

Trichoglossus chlorolepidotus, Gould, Birds of Australia, fol. vol. v. pl. 50.

The present Lorikeet inhabits New South Wales. To give any detailed account of its habits and mode of life would be merely repeating what I have said respecting the *Trichoglossus multicolor*, with which it frequently associates and even feeds

on the same branch ; it is, however, not so numerous as that species, nor so generally distributed over the face of the country. The brushes near the coast, studded here and there with enormous gums, towering high above every other tree by which they are surrounded, are the localities especially resorted to by it.

Its principal food is honey, gathered from the cups of the newly expanded blossoms of the *Eucalypti*, upon which it feeds to such an excess, that on suspending a fresh-shot specimen by the toes a large teaspoonful of liquid honey will flow from the mouth. A proper attention to the diet of these birds by supplying them with food of a saccharine character, would doubtless enable us to keep them as denizens of our cages and avaries, as well as the other members of the family.

Among other places, the Scaly-breasted Lorikeet breeds in all the large *Eucalypti* near Maitland on the Hunter, but I regret to say I did not procure its eggs.

The sexes are so closely alike as not to be outwardly distinguished.

All the upper surface, wings, and tail rich grass-green ; a few feathers at the back of the neck and all the feathers of the under surface bright yellow, margined at the tip with a crescent of grass-green, giving the whole a fasciated appearance ; under surface of the shoulder and base of the primaries and secondaries rich scarlet ; bill beautiful blood-red, inclining to orange at the tip ; cere and orbits olive ; irides in some specimens scarlet with a circle of buff round the pupil, in others buffy yellow.

As far as I am aware, this is the only species of *Trichoglossus* that has the bases of the feathers of the under surface yellow ; those feathers are, however, fringed round with green, imparting that scale-like appearance to the breast of the bird which suggested its specific appellation. In size this species is intermediate between the larger *Trichoglossi* and the succeeding species, *Ptilosclera versicolor*.

Genus **PTILOSCLERA**, *Bonaparte*.

This term has been proposed by Bonaparte for the *Trichoglossus versicolor* of Vigors ; I think the separation a judicious one, and believe that other species of the form will be found to inhabit the islands lying to the northward of Australia.

Sp. 447. **PTILOSCLERA VERSICOLOR.**

VARIED LORIKEET.

Trichoglossus versicolor, Vig. in Lear's Ill. Psitt., pl. 36.

Psitteuteles versicolor, Bonap. Rev. et Mag. de Zool., 1854, p. 157.

Ptilosclera versicolor, Bonap. Compt. Rend. de l'Acad. Sci., 1857.

Conurus lori scintillatus, Bourj. de St.-Hil. Perr., tab. 52.

Coriphilus versicolor, G. R. Gray, List of Spec. of Birds in Coll. Brit. Mus., part iii. sec. ii. p. 59.

W'e-ro-ole, Aborigines of Port Essington.

Trichoglossus versicolor, Gould, Birds of Australia, fol., vol. v. pl. 51.

There is no Australian species of the little honey-feeding Lorikeets yet discovered with which the present could be confounded ; it is at once rendered conspicuously distinct from all its allies by the narrow stripe of yellow down the centre of the feathers of the upper and under surface. The red of the crown and the varied tints of blue and yellow about the sides of the face and ear-coverts render it remarkably different from all other Lorikeets ; the red patch on the chest also is an additional feature by which it is distinguished from them ; for although red on this part of the body is not unusual, in no other instance are the feathers streaked down the centre with yellow.

The northern coast is the only part of the country in which it has as yet been discovered ; it is particularly abundant at Port Essington, where its suctorial mode of feeding leads it, like the other members of the genus, to frequent the flowery

Eucalypti. Gilbert informed me that it "congregates in immense numbers ; and when a flock is on the wing their movements are so regular and simultaneous it might easily be mistaken for a cloud passing rapidly along, were it not for the utterance of the usual piercing scream, which is frequently so loud as to be almost deafening. They feed on the topmost branches of the *Eucalypti* and *Melaleucæ*. I observed them to be extremely abundant during the month of August on all the small islands in Van Diemen's Gulf.

"The stomach is membranous and extremely diminutive in size. The food consists of honey and minute portions of the blossoms of their favourite trees."

Could this species be transmitted to Europe, and a kind of food suitable to it be discovered, it would form one of the most delightful cage-pets that has ever been introduced.

The male has the lores and crown of the head rich deep red ; round the neck a collar of deep cærulean blue ; back brownish green ; wings green ; rump and upper tail-coverts light yellowish green ; across the chest a broad band of purplish red ; under surface of the shoulder, abdomen, flanks and under tail-coverts light yellowish green ; all the feathers of the upper surface with a narrow stripe of yellowish green ; the stripes, being more yellow at the occiput, almost form a band ; ear-coverts yellow ; all the feathers of the under surface with a narrow line of bright yellow down the centre ; on each side of the abdomen and down the inside of the thighs stained with patches of purplish red ; primaries black, margined externally with deep green, with a fine line of yellowish green on the extreme edge of the feathers ; tail deep green, all but the two middle feathers greenish yellow on their internal webs ; irides bright reddish yellow, with a very narrow ring of dark red next the pupil ; bill scarlet ; cere and naked space round the eyes greenish white ; tarsi and feet light ash-grey.

The female resembles the male, but is much less brilliant in all her markings.

Genus GLOSSOPSITTA, *Bonaparte*.

Of this form three species inhabit Australia, and others New Guinea and the adjacent islands ; they have many habits in common with the typical *Trichoglossi*, but they somewhat differ from them in size and in the colouring of their plumage.

Sp. 448. GLOSSOPSITTA AUSTRALIS.

MUSK-LORIKEET.

Psittacus australis, Lath. Ind. Orn., vol. i. p. 104.

— *concinus*, Shaw, Nat. Misc. pl. 87.

Pacific Paroquet, Phil. Bot. Bay., pl. in p. 155.

Psittacus pacificus, Shaw, Gen. Zool., vol. viii. p. 419.

— *rubrifrons*, Bechst. Uebers. der Vög. Lath., S. 84. no. 99.

Trichoglossus concinnus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 292.

Lathamus concinnus, Less. Traité d'Orn., p. 206.

Trichoglossus australis, Wagl., Mon. Psitt. in Abhand., tom. i. pp. 493 and 549.

Psittacus velatus, Vieill. Nouv. Dict. d'Hist. Nat., tom. xxv. p. 373.

Glossopsitta australis, Bonap. Rev. et Mag. de Zool., 1854, p. 157.

Coolich, Aborigines of New South Wales.

Musk Parrakeet, Colonists.

Trichoglossus concinnus, Gould, Birds of Australia, fol., vol. v. pl. 52.

This species inhabits Tasmania, New South Wales and South Australia, and is very generally distributed over all parts of those countries. I have never heard of its occurring either in the western or northern portions of Australia, whence I infer that its habitat is restricted to the south and south-eastern divisions of the continent. Like every other species of Lorikeet, the present bird is always to be found upon the *Eucalypti*, whose blossoms afford it a never-failing supply of honey, one or other of the numerous species of that tribe of trees being in flower at all seasons of the year. It is

stationary in New South Wales, but I am not certain that it is so in the more southern country of Tasmania, where it is known by the name of the Musk-Parrakeet, from the peculiar odour it emits.

It is a noisy species, and with its screeching note keeps up a perpetual din around the trees in which it is located. During its search for honey it creeps among the leaves and smaller branches in the most extraordinary manner, hanging and clinging about them in every possible variety of position. It is so excessively tame that it is very difficult to drive it from the trees, or even from any particular branch. Although usually associated in flocks, it appears to be mated in pairs, which at all times keep together during flight, and settle side by side when the heat of the sun prompts them to shelter themselves under the shade of the more redundantly leaved branches.

The eggs, which are dirty white and two in number, are of a rounded form, one inch in length and seven-eighths of an inch in breadth. Those I obtained were taken from a hole in a large *Eucalyptus* growing on the Liverpool range.

The sexes present no difference in colour, and the young assume the plumage of the adult at a very early age.

Forehead and ear-coverts deep crimson red ; at the upper part of the back a broad patch of light chestnut brown ; the remainder of the plumage grass-green ; on the flanks a spot of orange ; primaries and secondaries black, broadly margined on the external webs with grass-green ; base of all but the inner webs of the lateral tail-feathers deep red at the base, passing into yellow and tipped with grass-green ; bill blackish brown, passing into reddish orange at the tip ; cere and orbits olive-brown ; irides buff, surrounded by a narrow circle of yellow.

Sp. 449. GLOSSOPSITTA PORPHYROCEPHALUS.

PORPHYRY-CROWNED LORIKEET.

Psittacus purpurea, Diet. Phil. Mag. 1832, vol. xi. p. 387.

—— *purpureus*, Wagl. Mon. Psitt. in Abhand., vol. x. p. 747.

Trichoglossus porphyrocephalus, Diet. Trans. Linn. Soc. vol. xvii. p. 553.

Psittacula florentis, Bourj. de St.-Hil., Supp. Le Vaill. Hist. des Perr., pl. 84.

Glossopsitta porphyrocephalus, Bonap. Rev. et Mag. de Zool., 1854, p. 157.

Ko^u-ar, Aborigines of Western Australia.

Trichoglossus porphyrocephalus, Gould, Birds of Australia, fol. vol. v. pl. 53.

This handsome little bird is abundant in South Australia, is equally numerous at Swan River, and in all probability is dispersed over the whole of the intermediate country. It is the only true honey-feeding Lorikeet I have seen from Western Australia, a circumstance which cannot be accounted for, since the face of the country is covered with trees of a character so conducive to the well-being of the other members of the group.

Most of the specimens I collected were shot during the months of June and July in the neighbourhood of Adelaide, and some of them in the town itself. It appears to arrive in this district at the flowering season of the *Eucalypti*, in company with *Trichoglossus multicolor*, *Glossopsitta australis* and *G. pusilla*, all of which may frequently be seen on the same tree at one time. As this tribe of birds depends solely for its subsistence upon the flowers of the gum-trees, their presence in any locality would be vainly sought for at any season when those trees are not in blossom.

The sexes are precisely alike in size and in the colour of their plumage.

Forehead, lores and ear-coverts yellow, intermingled with

scarlet ; crown of the head deep purple ; back of the head and neck yellowish green ; wing-coverts and rump grass-green ; shoulder light blue ; under surface of the wing crimson ; primaries blackish brown, margined externally with deep green, the extreme edge being greenish yellow ; tail green above, golden beneath ; throat and under surface greenish grey, passing into golden green on the flanks and under tail-coverts ; bill black ; irides in some dark brown, in others light reddish brown, with a narrow ring of orange round the pupil ; feet bluish flesh-colour.

Sp. 450. GLOSSOPSITTA PUSILLA.

LITTLE LORIKEET.

Psittacus pusillus, Shaw in White's Journ., pl. in p. 262.

—— *nuchalis*, Bechst. Uebers. der Vög., p. 81.

—— (*Conurus*) *pusillus*, Kuhl. Consp. Psitt., pp. 8, 47.

Perruche à face rouge, Le Vaill. Perr., tom. i. p. 124, pl. 62.

Small Parrakeet, Lath. Gen. Syn., vol. ii. p. 88.

Small Parrot, Lath. Gen. Hist., vol. ii. p. 194.

Trichoglossus pusillus, Vig. and Horsf. in Linn. Trans., vol. xv. p. 298.

Lathamus pusillus, Less. Traité d'Orn., p. 206.

Glossopsitta pusilla, Bonap. Rev. et Mag. de Zool., 1854, p. 157.

Jerryang, Aborigines of New South Wales.

Trichoglossus pusillus, Gould, Birds of Australia, fol., vol. v. pl. 54.

This familiar species, the least of the Australian *Psittacidae*, enjoys a range of habitat precisely similar to that of the *Glossopsitta australis*, being dispersed over the whole of New South Wales, South Australia and Tasmania ; it is, however, more sparingly diffused over the latter country. I found it tolerably abundant, and killed several specimens on Maria Island, near the entrance of Storm Bay. On the continent of Australia it is not only to be found in the same districts and at the same seasons of the year as *G. australis*, but it is more frequently observed in company with that species than alone ; flocks of each often occupying the same tree, and even the

same branch, all busily engaged in extracting their nectarine food. It creeps about under and among the leaves with the greatest facility, and, like the other members of the group, appears to be always associated in pairs. As might be expected from the structure of its wing, which is admirably adapted for rapid progression, it flies through the air with arrow-like swiftness.

I succeeded in finding the breeding-places of this species, and on the 11th of October 1839, procured four eggs from a hole in a small branch of a lofty *Eucalyptus*, growing on the flats at Yarrundi on the Upper Hunter. They were white and of an oval form, nine lines and a half long by seven lines and a half broad.

The sexes are similar in plumage, and differ but little in size; the female is, however, rather more diminutive than the male.

Face deep red; back of the neck brown; all the remainder of the plumage grass-green; primaries, secondaries and greater coverts black, margined externally with grass-green; two centre tail-feathers and outer webs of the remainder grass-green; the inner webs of the lateral feathers fine red at the base, passing into greenish yellow towards the tip; bill black; cere and orbits dark olive-brown; irides orange, surrounded by a narrow line of yellow.

Order RASORES.

If we were to remove the *Columbidæ* (or *Pigeons*) from the *Rasores*, Australia would indeed be meagrely supplied with the members of this Order; for how sparingly do its varied forms occur therein! No bird like the gorgeous Peacock of India; no Pheasant, as in ancient Colchis; no true *Gallus*, the bird that from all time has supplied the wants of man; no Grouse or Partridge to herald in a season of sport or pastime: a few Turnices, a Quail, and an apology for our *Perdix cinerea* in the *Synoicus australis* are nearly all the birds of this Order to which she can lay claim; but on the other hand, among the few she does possess, she can boast of her *Talegallus*, her *Leipoa*, and her *Megapodius*, as birds whose extraordinary habits and economy compensate for the paucity of Gallinaceæ.

Family COLUMBIDÆ.

The members of this important family are distributed over every portion of the globe, in no part of which are they more numerous than in Australia, since that country is inhabited by more than twenty species, which, like the *Psittacidæ*, comprise several well-marked and distinct genera, and appear to be naturally divided into two great groups, the one arboreal, the other terrestrial; the *Ptilinopi*, *Carpophagæ*, and *Lopholaimus*, with their expansive gullets and broad hand-like feet, forming part of the former, and the members of the genera *Phaps*, *Geophaps*, and *Geopelia*, the latter. The *Ptilinopi* and other allied forms are, in consequence of the peculiar character of the vegetation, confined, without a single exception, to the eastern and northern coasts.

Genus PTILINOPUS, *Swainson*.

The species of this genus, the most brilliant and highly-coloured of the *Columbidæ*, range over Australia, New Guinea, the Moluccas, the Celebes, and Polynesia.

Sp. 451. PTILINOPUS SWAINSONII, *Gould*.

SWAINSON'S FRUIT-PIGEON.

Ptilinopus purpuratus, var. *regina*, Swains. Zool. Journ., vol. i. p. 474 ?

Columba purpurata, Jard. and Selb. Ill. Orn., vol. ii. pl. 70.

Ptilinopus swainsonii, Gould in Proc. of Zool. Soc., part x. p. 18.

Ptilopus swainsoni, Bonap. Coup d'Œil des Pig., Compt. Rend. de l'Acad. Sci., tom. xxxix et xl. 1854, 1855.

***Ptilinopus swainsonii*, Gould, Birds of Australia, fol., vol. v. pl. 55.**

The specimens from which my description of this species was taken are from the brushes of the river Clarence, in which district and in many parts of Queensland it is tolerably abundant, the dense and luxuriant brushes affording it a congenial habitat and breeding-place ; but as I have never myself seen this bird in a state of nature, I am unable to give any account of its habits or economy. The sexes are so nearly alike in colouring that dissection alone can distinguish them with certainty.

Forehead and crown deep crimson-red, surrounded except in front with a narrow ring of light yellow ; back of the neck greyish green ; all the upper surface bright green tinged with yellow, the green becoming deep blue towards the extremities of the tertiaries, which are broadly margined with yellow ; primaries slaty grey on their inner webs and green on the outer, very slightly margined with yellow ; tail-feathers deep green, largely tipped with rich yellow ; throat greenish grey, stained with yellow on the chin in some specimens and greyish white in others ; breast dull green, each feather forked at the end and with a triangular silvery-grey spot at each

extremity; flanks and abdomen green, with a large patch of orange-red in the centre of the latter; under tail-coverts orange yellow; thighs green; irides reddish orange; bill greenish black and horn-colour at tip; feet olive brown.

Total length 9 inches; bill $\frac{5}{8}$; wing $5\frac{3}{4}$; tail $3\frac{3}{4}$; tarsi $\frac{5}{8}$.

Sp. 452. **PTILINOPUS EWINGII**, *Gould*.

EWING'S FRUIT-PIGEON.

Ptilinopus ewingii, Gould in Proc. of Zool. Soc., part x. p. 19.

Ptilopus ewingi, Bonap. Coup d'Œil des Pigeons, Compt. Rend. de l'Acad. Sci., tom. xxxix et xl. 1854, 1855.

Ptilinopus ewingii, Gould, Birds of Australia, fol., vol. v. pl. 56.

This lovely species, which is a native of the Coburg Peninsula, and doubtless ranges over the northern coast of Australia generally, differs from the preceding, *Ptilinopus swainsonii*, in being much smaller in all its measurements, in the colour of the crown being rose-pink instead of crimson-red; in the breast being pale greenish grey instead of dull green; in having the centre of the abdomen rich orange instead of lilac; and also in having the tail-feathers tipped with greenish yellow instead of clear rich yellow.

In naming the second Australian species of this beautiful form after the Rev. Thomas J. Ewing, D.D., I am actuated by a desire to pay a just compliment to one who has devoted considerable attention to the literature of ornithology; I feel assured, therefore, that however objectionable the naming of species after persons may be under ordinary circumstances, it will not in this instance be deemed an inappropriate mode of evincing my sense of the many admirable qualities of a highly esteemed friend.

Forehead and crown of the head rose-pink, bordered with a narrow line of yellow, except in front; back of the head and neck greenish grey; all the upper surface bright green,

passing into deep blue on the tertiaries ; primaries, secondaries, and tertiaries slightly margined with yellow ; tail largely tipped with yellow, tinged with green, particularly on the two centre feathers ; chin pale yellow ; sides of the neck greenish grey ; chest pale greenish grey, each feather forked at the end and tipped with grey ; below the chest an indistinct band of sulphur-yellow ; flanks and lower part of the abdomen green ; centre of the abdomen rich orange, in the middle of which is a lunar-shaped mark of lilac ; under tail-coverts orange ; thighs and tarsi green ; irides orange ; feet olive.

Total length $7\frac{3}{4}$ inches ; bill $\frac{3}{4}$; wing $4\frac{5}{8}$; tail 3 ; tarsi $\frac{5}{8}$.

Genus LAMPROTRERON, *Bonaparte*.

This genus was established for the *Columba superba* of Temminck, and two other species—*C. porphyrea* and *C. holosericea*. Whether the latter two birds are really of the same form as the first I am unable to say ; but the present species is the type of the genus, and the only one found in Australia.

Sp. 453. LAMPROTRERON SUPERBUS.

SUPERB FRUIT-PIGEON.

Columba superba, Temm. Les Fig., fol. 2nd fam., p. 75, pl. 33.

Ptilinopus superbus, Steph. Cont. of Shaw's Gen. Zool., vol. xiv. p. 279.

Lamprotreron superba, Bonap. Coup d'Œil des Fig. Compt. Rend. de l'Acad. Sci., tom. xxxix et xl. 1854, 1855.

Ptilinopus superbus, Gould, Birds of Australia, fol. vol. v. pl. 57.

This lovely species was originally figured and described in the splendid work on the Pigeons by Madame Knip and Temminck as an inhabitant of one of the islands of the Pacific Ocean ; and it affords me much pleasure to be enabled to include it in the Fauna of Australia, specimens having been procured by Mr. Bynoe on Booby Island, which lies off the north coast ; since then it has, I believe, been found on the

mainland. In all probability it enjoys an extensive range over the islands of New Guinea. The specimens procured by Mr. Bynoe were fortunately male and female: the latter sex exhibits in its plumage traces of immaturity; but whether the rich colouring of the crown of the head is at all times absent is a point yet to be ascertained, a knowledge of which would greatly tend to clear up the confusion which reigns throughout this gorgeously-coloured group of Pigeons.

The specific term *superbus* is a most appropriate designation for this charming little Pigeon, which must be seen in its native wilds before a just conception can be formed of its beauty; for the hues of no other feathered creature can surpass those of newly moulted individuals of this bird.

The male has the crown of the head of a very deep rich purple; sides of the head and occiput olive-green; sides and back of the neck bright rufous; shoulders very dark bluish black; all the upper surface and wings deep yellowish green, tinged with rufous; the scapularies and tertiaries with a spot of deep green near the extremity; primaries and secondaries black, slightly margined externally near the tip with pale yellow; tail grey at the base, to which succeeds a broad band of black, glossed particularly on the central feathers with green; beyond this the tips are white, all but the outer ones washed with green; chin white; breast grey, below which a band of black; abdomen and under tail-coverts white, the latter with a stripe of olive down the centre; band crossing the flanks and another crossing the thighs olive-green; feet orange; bill dark horn-colour.

The female has the crown of the head and all the upper surface yellowish green, with a small spot of deep blue near the tips of the scapularies; primaries and secondaries black, slightly edged with yellow; at the occiput a large patch of deep green; chin grey; centre of breast greenish grey; flanks green; centre of abdomen straw-yellow.

Genus MEGALOPREPIA, *Reichenbach*.

The species of this genus are widely dispersed over Eastern Australia, New Guinea, and the adjacent islands. Strictly arboreal in their habits, and feeding entirely upon fruits, berries, and seeds, they frequent the towering fig-trees when their fruit is ripe, and the lofty palms for the sake of their large round seeds. Their short tarsi and dilated feet are admirably adapted for clasping the branches. Two species inhabit Australia.

Sp. 454. MEGALOPREPIA MAGNIFICA.

MAGNIFICENT FRUIT-PIGEON.

Columba magnifica, Temm. in Linn. Trans., vol. xiii. p. 125.

Carpophaga magnifica, Selby in Nat. Lib. Orn., vol. v. Pigeons, p. 115.

Megaloprepia magnifica, Reich. Syst. Av., tab. 33. figs. 1299, 1300.

Carpophaga magnifica, Gould, Birds of Australia, fol., vol. v. pl. 58.

This splendid bird, the finest of the Pigeons yet discovered in Australia, is abundant in all the brushes on the south-east portion of that country, but is less numerous in the Illawarra district than in the neighbourhood of the rivers Macquarrie, Clarence, and Macleay; how far its range may extend from thence to the northward has yet to be ascertained; I did not observe it in any of the brushes clothing the ranges of the interior. Its chief food is the wild fig and the nut-like fruit of the large palms. It is rather a shy bird, and from its quiet habits is not easily discovered, unless it betrays its presence by the hoarse, loud, and monotonous note, which is frequently uttered by the male during the pairing-season. This note is so extraordinary, and so unlike that of any other bird, that it causes the utmost surprise and wonderment as to what it can proceed from, in the minds of those persons who hear it for the first time.

The sexes present no external difference, but the smaller-sized individuals may generally be regarded as females.

Head and neck pale grey; all the upper surface and wings rich golden green; the greater coverts and the tertiaries with a patch of light yellow near the base of the outer webs, forming an irregular oblique band across the wing; primaries green; under surface of the wing brown, passing into cinnamon-brown at the base of the feathers; tail rich deep bronzy green; line down the centre of the throat, and the whole of the breast and abdomen rich deep purple; under surface of the shoulder, the thighs, and vent deep gamboge-yellow; under tail-coverts greenish grey, washed with gamboge-yellow.

Sp. 455. MEGALOPREPIA ASSIMILIS, *Gould*.

ALLIED FRUIT-PIGEON.

Carpophaga assimilis, Gould in Proc. of Zool. Soc., 1850, p. 201.

Megaloprepia assimilis, Bonap. Coup d'Œil des Fig., Compt. Rend. de l'Acad. Sci., tom. xxxix et xl. 1854, 1855.

Carpophaga assimilis, Gould, Birds of Australia, fol., Supplement, pl.

I am not surprised that an additional Fruit-Pigeon should have been discovered in the north-eastern parts of Australia, since in every degree nearer the tropics palm-trees, among which these birds are principally found, become more abundant.

There exists in New Guinea another nearly allied species, to which the name of *puella* has been given by Lesson. This bird is still smaller than the present one, and has the yellow markings at the tips of the wing-coverts in the form of round spots instead of oval blotches; its face and neck are more grey, and its back less golden or sulphur-green, than in *M. assimilis*.

Numerous specimens of this bird were collected on the Cape York Peninsula by Mr. Macgillivray and the officers of Her Majesty's Ship Rattlesnake.

The only outward differences between the sexes consist in the somewhat smaller size and less brilliant colouring of the female.

Head, throat, and ear-coverts grey; all the upper surface, wings, and tail sulphur-green; each of the wing-coverts with an oblong mark of rich yellow at the tip, forming an oblique band across the shoulder; line down the centre of the throat, chest and abdomen rich purple; under wing-coverts, vent, thighs, and under tail-coverts rich orange-yellow; basal portion of the inner webs of the primaries and secondaries cinnamon.

Total length 14 inches; bill 1; wing 7; tail 6; tarsi $\frac{3}{4}$.

Genus LEUCOMÆLANA, *Bonaparte*.

Bonaparte places the next species in his division *Palumbæ*, but keeps it distinct from the other genera of the section. Although a bird of large size, it is certainly of a very delicate structure, and in this respect differs from the other members of the family.

Sp. 456. LEUCOMELÆNA NORFOLCIENSIS.

WHITE-HEADED FRUIT-PIGEON.

Columba norfolciensis, Lath. Ind. Orn., Supp. p. lx.

—— *leucomela*, Temm. in Trans. Linn. Soc., vol. xiii. p. 126.

—— *leucomelana*, Wagl. Syst. Av., *Columba*, sp. 56.

Carpophaga norfolciensis, Gray, List of Spec. of Birds in Coll. Brit. Mus., part iii. p. 5.

Alsocomus leucomela, Blyth.

Myristicivora norfolciensis, Reich. Syst. Av., t. ccxxix. figs. 1280–82.

Leucomelana norfolciensis, Bonap. Coup d'Œil des Pige., Compt. Rend de l'Acad. Sci., tom. xxxix et xl. 1854, 1855.

Carpophaga leucomela, Gould, Birds of Australia, fol., vol. v. pl. 59.

This fine species of Pigeon is an inhabitant of those vast primæval forests of New South Wales to which the colonists

have applied the name of Brushes. I found it very numerous on Mosquito and the other low islands near the mouth of the river Hunter, as well as in the cedar brushes of the Liverpool range; I believe that it breeds in both those districts; and that it never quits these luxuriant forests for other parts of the country is more than probable, as a plentiful supply of fruits and berries is furnished by the various trees at every season of the year; the wild fig, the palm-nut, and the wild grape constitute a considerable portion of its food. The slender branches are often borne down by its weight, particularly when it clings to the extreme end of the spray to obtain the best and ripest fruit; in this mode of clinging and in many of its actions it far more resembles the larger Honey-eaters and Parrots than the Pigeons; the structure of its foot is beautifully adapted for the duties it is intended to perform.

The powers of flight of this species are very great, its voluminous wing enabling it to pass from one part of the forest to another in a comparatively short space of time; hence flocks may frequently be observed passing over the tops of the trees, forsaking a locality they have exhausted of its supplies, and in search of another where food is more abundant.

The nest of this species, like those of other Pigeons, is a slight flat structure formed of small sticks and twigs; the eggs are frequently only one, and never more than two in number, of a pure white.

The sexes may be distinguished by the smaller size of the female, and by her colours being less strongly contrasted than those of the male, the yellowish white of the head and breast blending into the darker colouring of the other parts.

The male has the head, neck, and breast white, washed with buff, particularly on the crown; all the upper surface, wings, and tail greyish black; all the feathers of the back,

rump, and lesser wing-coverts bordered with bronzy-purple in some, and greenish purple in others; flanks slate-colour; abdomen dingy buff; bill for two-thirds from the base beautiful pink-red, covered with a mealy substance; tip of the bill yellowish white, tinged with lilac; irides large and of a rich yellowish hazel in some specimens, reddish orange in others; naked skin of the orbits mealy pink-red; feet buff, with the scales pink-red and the nails white.

Genus MYRISTICIVORA, *Reichenbach*

A genus of fruit-eating Pigeons, whose range extends from the Philippines, through the Indian Islands, to Australia. The general plumage of these birds is white or cream-white, with markings of black on the tail and wings.

Sp. 457. MYRISTICIVORA SPILORRHOA, *G. R. Gray*.

WHITE NUTMEG-PIGEON.

Carpophaga spilorrhoa, *G. R. Gray* in *Proc. of Zool. Soc.* XXVI. p. 186.
M^b-koitt, Aborigines of Port Essington.

Carpophaga luctuosa, *Gould*, *Birds of Australia*, fol., vol. v. pl. 60.

This bird arrives in the Cobourg Peninsula at the beginning of November, and departs again in April or May. It is strictly arboreal in its habits, living among the branches of the highest trees, and feeding upon various fruits and berries. Gilbert's notes respecting it are as follows:—"This Pigeon may generally be seen in great numbers wherever the wild nutmeg is to be found, and so exclusively does it confine itself to the trees in search of food, that during the whole time I was in the country I never saw one rise from the ground, nor did I meet with any person in the settlement who had. It flies very rapidly, and generally mounts up to so great a height as to be beyond the range of a gun. The only time

at which I could succeed in procuring specimens was the evening, when it resorts to the mangroves on the small islands lying off the shore, or to the dense thickets a short distance inland; at this time it may be seen arriving in small flocks of from ten to fifteen to roost for the night. Its note, like that of the other pigeons, is a *coo*, but at times, particularly when it has paired, it is much louder and deeper than that of any other species I ever heard.

“It pairs and commences breeding immediately after its arrival in November, and I have obtained eggs as late as the middle of January. The nest is formed of a few sticks laid across one another in opposite directions, and is so slight a structure that the eggs may usually be seen through the interstices from beneath, and it is so flat that it appears wonderful how the eggs remain upon it when the branch is waving about in the wind; it is usually built on the horizontal branch of a mangrove, and it would seem that it prefers for this purpose a branch overhanging water. That it never lays more than one egg appears to me without a doubt, for upon visiting Table Head River on the eastern side of the harbour of Port Essington I found no less than twenty nests, all of which contained either a single egg or a single young bird.” Mr. Elsey found it on the Victoria River; and out of Australia it has been met with in the Aru Islands, whence Mr. Wallace brought specimens.

Mr. G. R. Gray states that this bird, which I had considered to be identical with *C. luctuosa* of Temminck, “is distinguished by the feathers of the thighs and under tail-coverts being spotted near the margins and the outer tail-feathers, with the greater part of the outer web and tip black, while in *C. luctuosa* the feathers of the thighs and under tail-coverts end in deep black, and the outer tail-feathers in white throughout, except on the outer web nearest the base.”

The whole of the plumage buffy white, with the exception of the primaries, secondaries and greater wing-coverts, which are

greyish black, and the tips of the tail-feathers, which are black, the black becoming of less extent as the feathers recede from the centre of the tail, until the outer feather is only slightly tipped; this feather is also broadly margined with black on the outer web for three-fourths of its length from the base; the under tail-coverts also have an irregular band of black near the tip of each feather; irides dark brown; bill dark greenish grey, except the tip, which is light yellow.

Genus LOPHOLAIMUS, *G. R. Gray.*

The single species of this genus is strictly a fruit-eating Pigeon, and is, so far as we yet know, confined to Australia.

Sp. 458. LOPHOLAIMUS ANTARCTICUS.

TOP-KNOT PIGEON.

Columba antarctica, Shaw, Zool. of New Holl., pl. 5.

—— *dilopha*, Temm. in Linn. Trans., vol. xiii. p. 124.

Lophorhynchus dilophus, Swains. Class. of Birds, vol. ii. p. 348.

—— *antarcticus*, G. R. Gray, List of Gen. of Birds, 1st Edit., p. 58.

Lopholaimus antarcticus, G. R. Gray, Ibid., App. to 2nd Edit., p. 12.

Top-knot Pigeon of the Colonists of New South Wales.

Lopholaimus antarcticus, Gould, *Birds of Australia*, fol., vol. v. pl. 61.

Although the specific term of *antarcticus* is not an appropriate appellation for this noble Pigeon, it cannot, I think, be sunk into a synonym, since it was first applied to it in a work exclusively on the zoology of New Holland, as will be seen on reference to the synonyms above quoted. I feel assured that Temminck was either unacquainted with the publication alluded to, or that the circumstance of its having been previously described and figured had escaped his memory, when he characterized this bird in the thirteenth volume of the "Linnean Transactions," and subsequently figured it in his "Planches Coloriées," under the name of *Columba dilopha*.

I have not yet seen specimens of this Pigeon from the northern or western coast, and it appears to be exclusively confined to the rich and luxuriant districts of the southern and eastern portions of Australia ; being particularly abundant in the brushes of Illawarra, the Hunter, the Clarence, &c., where there are trees which furnish it at all seasons with a plentiful supply of food. So entirely arboreal are its habits, that I never once saw it descend to the ground, or even to the low shrub-like trees. It is strictly gregarious, often traversing the forests in flocks of many hundreds in search of those trees most laden with its favourite fruit ; upon discovering which the entire flock alight simultaneously, often bearing down the smaller twigs and branches with their weight.

Among other substances found in the stomachs of those specimens I dissected, were the wild-fig and the large round berries of the cabbage-palm ; in all probability it also feeds upon fruits of a still larger size, as its bill and throat are capable of being dilated to a great extent.

Its flesh is not so good as that of many other members of its family, being coarse and dry-eating.

I had no opportunity of observing its nidification, neither could I obtain any information on the subject.

The sexes are alike in plumage.

Frontal crest, sides of the head, neck, breast, and under surface silvery grey, the feathers of the neck and breast being hackled, and admitting the darker colouring of their bases to be perceived through the interstices ; elongated occipital plumes rust-red ; from the eye to the occiput a line of black, which, meeting behind, is continued for a short distance down the back of the neck ; all the upper surface dark slate-grey ; primaries, secondaries, and edge of the wing black ; tail light grey at the base, black for the remainder of its length, crossed by an irregular band of buffy grey about an inch from the extremity ; irides fiery orange, surrounded by a lash of pink-red, and seated in a bare mealy

space of the same colour, but hardly so bright; bill bright rose-red, inclining to lilac at the tip; fleshy part covering the nostrils and at the base of the lower mandible greenish lead-colour in the male, and lead-colour in the female; feet purplish red; back of the tarsi and sole of the feet greyish brown.

Genus CHALCOPHAPS, *Gould*.

A genus of Brush Pigeons, which seek their food on the ground and live on the fallen seeds and berries they find there. Two species inhabit Australia, one of which is confined to the eastern and the other to the northern coast; other species are found in Java, Sumatra, and on the continent of India, the whole forming a group well worthy of investigation.

Sp. 459. CHALCOPHAPS CHRYSOCHLORA.

LITTLE GREEN PIGEON.

Colomba javanica, Temm. Les Pig., pl. 26, but not the description (Bonaparte).

—— *chrysochlora*, Wagl. Syst. Av. Columba, sp. 79, but not the habitat (Bonaparte).

Chalcophaps chrysochlora, Gould, *Birds of Australia*, fol., vol. v. pl. 62.

The Little Green Pigeon is sparingly dispersed in all the brushes of New South Wales, both those clothing the mountain ranges as well as those near the coast; how far it may proceed northwards has not yet been ascertained. The brushy districts are the localities peculiarly adapted to it, and these I believe it never leaves for the more open parts of the country; hence it is but little known to, and seldom seen by, the colonists, a circumstance the more to be regretted, as the beauty and brilliancy of its plumage and the neatness of its form render it one of the prettiest of the Australian birds. When flushed, it flies very quickly through the scrub, but to no great

distance, and readily eludes pursuit by pitching suddenly to the ground, and remaining so quiet that it can rarely be discovered.

I never met with its nest, nor could I obtain, either from the natives or settlers, any particulars respecting its nidification.

The sexes differ considerably in colour, and the female is somewhat smaller than the male.

The male has the crown of the head, face and all the under surface deep vinaceous ; nape and back of the neck dark grey ; edge of the shoulder snow-white ; centre of the back, wing-coverts and outer webs of the tertiaries shining greenish copper-colour ; rump and upper tail-coverts slaty-black, crossed by three indistinct bands of grey ; primaries and secondaries brown, largely margined with ferruginous on the base of their inner webs ; tail black, except the two outer feathers on each side, which are light grey, crossed by a broad band of black near the tip ; under tail-coverts black ; apical half of the bill blood-red, basal half plum-colour ; feet dull reddish plum-colour ; orbits dark grey ; eyelash lilac-red ; irides lilaceous lead-colour.

The female has the head and neck dark cinnamon-brown, approaching to chocolate ; the wing-coverts much more green than in the male ; face and all the under surface cinnamon-brown, with merely a wash on the breast of the vinaceous tint ; upper tail-coverts brown ; four centre tail-feathers brown ; the two next on each side chestnut-brown, and the outer one on each side grey ; all but the four middle ones crossed near the tip with a broad band of black ; and the soft parts similar, but less brilliant than in the male.

Sp. 460. CHALCOPHAPS LONGIROSTRIS, *Gould*.

LONG-BILLED GREEN PIGEON.

As the bird of this form inhabiting the country in the neigh-

bourhood of Port Essington differs from those inhabiting New South Wales in the much greater length of the mandibles. I have named it *Chalcophaps longirostris*. Its colouring is similar to that of *C. chrysochlora*, but is more brilliant, and the bands across the rump are more distinct.

Genus LEUCOSARCIA, Gould.

A genus proposed by me for the reception of the Wonga-Wonga Pigeon of the Australian Brushes, a bird having many peculiar habits. Its flesh being white, and extremely delicate, it is one of the best birds for the table inhabiting Australia, or indeed any other country.

The colour of the flesh suggested the generic term I have assigned to it.

Sp. 461. LEUCOSARCIA PICATA.

WONGA-WONGA.

Columba picata et melanoleuca, Lath. Ind. Orn. Supp., p. lix.

—— *armillaris*, Temm. Les Pig., p. 13, pl. 6.

—— *jamiesonii*, Quoy et Gaim. Voy. Zoolog., p. 123.

Colombe Goad-gang, Temm. Les Pig., p. 118.

Phaps picata, G. R. Gray, Gen. of Birds, vol. ii. p. 477, *Phaps*, sp. 4.

Wonga-wonga, Aborigines of New South Wales.

White-fleshed and *Wonga-wonga Pigeon*, Colonists of New South Wales.

Leucosarcia picata, Gould, Birds of Australia, fol., vol. v. pl. 63.

This Pigeon must always be an object of interest, from its large size and the whiteness of its flesh rendering it a great delicacy for the table; in which respect it is second to no other member of its family, the only one at all approximating to it being the *Geophaps scripta*. It is to be regretted that a bird possessing so many qualifications should not be generally dispersed over the country, but such is not the case. To look for it on the plains or in any of the open hilly parts would be useless; no other districts than the

brushes which stretch along the line of coast of New South Wales, or those clothing the sides of the hills of the interior, being favoured with its presence. The same kind of situations that are suited to the Brush Turkey (*Talegallus latham*), the Menura and the Satin-bird are equally adapted to those of the Wonga-wonga; its distribution, therefore, over Australia mainly depends upon whether the surface of the country be or be not clothed with that rich character of vegetation common to the south-eastern portion of the continent. As the length of its tarsi would lead one to expect, it spends most of its time on the ground, where it feeds upon the seeds and stones of the fallen fruits of the towering trees under whose shade it dwells, seldom exposing itself to the rays of the sun, or seeking the open parts of the forest. While traversing these solitudes, the explorer is frequently startled by the sudden rising of the Wonga-wonga, the noise of whose wings is not very different from that made by the rising of a Pheasant. Its flight is not of long duration, this power being merely employed to remove it to a sufficient distance to avoid detection by again descending to the ground, or mounting to the branch of a neighbouring tree. I had frequent opportunities of personally observing it at Illawarra, on the low islands at the mouth of the river Hunter, and in the cedar-brushes of the Liverpool range. During my encampment in each of these parts, it was always secured whenever an opportunity occurred, for the purpose of eating.

Of the nidification of this valuable bird I could gain no precise information.

The sexes present no external difference in the markings of their plumage, but the female is somewhat inferior to the male in size.

Lores black; forehead and chin white; all the upper surface, wings, and tail deep slate-grey; primaries brown; the three lateral tail-feathers on each side tipped with white; sides of the head light grey, gradually passing into the greyish

black of the breast, which latter colour is interrupted on each side by a broad line of white which passes obliquely down, and meets on the centre of the breast near the lower margin of the greyish black ; feathers of the abdomen and flanks white, the latter with a triangular black spot near the extremity of each feather ; under tail-coverts dark brown, largely tipped with buff, particularly on the inner webs ; irides very dark brown, surrounded by a narrow pink-red lash ; tip of the bill purplish black ; base of the bill and the fleshy operculum covering the nostrils pink-red ; legs and feet bright pink-red.

Genus PHAPS, *Selby*.

The species of the genus *Phaps*, a form which I believe to be confined to Australia, are more widely dispersed than those of any other section of the family, being universally distributed over the entire country from north to south and from east to west ; even the parched deserts of the interior are visited by them if a supply of water sufficient for their existence be within reach of their evening flight, which is performed with the most extraordinary rapidity and power.

Sp. 462.

PHAPS CHALCOPTERA.

COMMON BRONZE-WING.

Columba chalcoptera, Lath. Ind. Orn., vol. ii. p. 604.

Bronze-winged Pigeon, Lath. Gen. Syn. Supp. vol. ii. p. 266.

Peristera chalcoptera, Swains. Class. of Birds, vol. ii. p. 349.

Phaps chalcoptera, Selby, Nat. Lib. Orn., vol. v. Pigeons, p. 195, pl. 21.

Oo-da, Aborigines of Western Australia.

Ar-a-war-ra-wa, Aborigines of Port Essington.

Bronze Pigeon, Colonists of Swan River.

Peristera chalcoptera, Gould, Birds of Australia, fol., vol. v. pl. 64.

The Bronze-winged Pigeon is so generally distributed over all parts of Australia, that, without a single exception, the

colonists of every settlement have found the surrounding country inhabited by this fine bird. Specimens from Port Essington, Swan River, Tasmania, and New South Wales differ so little from each other, either in their size or markings, that they must all be regarded as one and the same species. At Swan River it is said to be migratory, and to be met with in the interior of that part of the country in large flocks. At Port Essington, on the contrary, it would seem to be stationary.

It is a plump, heavy bird, weighing when in good condition fully a pound; and is constantly eaten by every class of persons resident in Australia. Its amazing powers of flight enable it to pass in an incredibly short space of time over a great expanse of country, and just before sunset it may be observed swiftly winging its way over the plains or down the gullies to its drinking-place. During the long drought of 1839-40, when I was encamped at the northern extremity of the Brezi range, I had daily opportunities of observing the arrival of this bird to drink; the only water for miles, as I was assured by the natives, being that in the immediate vicinity of my tent, and that merely the scanty supply left in a few small natural basins in the rocks, which had been filled by the rains of many months before. This peculiar situation afforded me an excellent opportunity for observing not only the Bronze-wing, but many other birds inhabiting the neighbourhood: few if any of the true insectivorous or fissirostral birds came to the water-holes; but, on the other hand, those species that live upon grain and seeds, particularly the Parrakeets and Honey-eaters (*Trichoglossi* and *Meliphagi*), were continually rushing down to the edges of the pools, utterly regardless of my presence, their thirst quite overcoming their sense of danger; seldom, if ever, however, did the Bronze-wing make its appearance during the heat of the day, but at sundown it arrived with arrow-like swiftness, either singly or in pairs. It did not descend at once

to the edge of the pool, but dashed down to the ground at about ten yards' distance, remained quiet for a short time, then walked leisurely to the water, and, after drinking, winged its way to its roosting-place: with a knowledge, therefore, of the habits of this bird, the weary traveller may always know when he is in the vicinity of water; and, however arid the appearance of the country may be, if he observes the Bronze-wing wending its way to a given point, he may be certain to procure a supply of water. When rain has fallen in abundance, and the rivers and lagoons are filled, the case is materially altered; then the Bronze-wing and many other birds are not so easily procured.

It has been supposed that a partial exodus of this species takes place from time to time, a circumstance which I think is very probable, as its numbers are sometimes suddenly increased. After the breeding season is over, both the adults and young resort to the stubble-fields of the settlers, when from twenty to thirty brace may be killed in a day. Although, as I have before stated, the Bronze-wing is an excellent article of food, it must yield the palm in this respect to the Wonga-wonga Pigeon (*Leucosarcia picata*) and the Partridge Bronze-wing (*Geophaps scripta*), whose flesh is white and more delicate in flavour.

The Bronze-wing feeds almost entirely on the ground, where it finds the various kinds of leguminous seeds that constitute its food. It breeds during August and four following months, and often rears two or more broods; the eggs are white and two in number, one inch and three-eighths long and one inch broad.

Its nest, which is very similar to that of the other members of the family, is a frail structure of small twigs, rather hollow in form, and is usually placed on the horizontal branch of an apple- or gum-tree near the ground, those trees growing on flat meadow land near water being evidently preferred. This species is very frequently seen in confinement, both in its native country and in England.

Forehead in some deep buff, in others buffy white; line under the eye and the chin yellowish white; crown of the head and occiput dark brown, bounded on the sides with plum-colour; sides of the neck grey; back of the neck and all the upper surface brown, each feather margined with tawny brown; wings brown, with paler edges; each of the coverts with an oblong spot of rich lustrous coppery bronze on the outer web near the base, the outline of which towards the extremity of the feather is sharply defined; tip of each of the coverts grey, fading into white on the extreme tip; two or three of the tertiaries with an oblong spot of lustrous green on their outer webs at the base, bounded by a narrow line of buff; two centre tail-feathers brown; the remainder deep grey, crossed by a band of black near the tip; under surface of the wing and inner edges of the primaries and secondaries ferruginous; breast deep vinaceous, passing into greyish on the centre of the abdomen and under tail-coverts; irides dark reddish brown; bill blackish grey; legs and feet carmine-red.

Sp. 463.

PHAPS ELEGANS.

BRUSH BRONZE-WING.

Columba elegans, Temm. Les Pig., fol., p. 56, pl. 22.

Opaline Pigeon, Lath. Gen. Hist., vol. viii. p. 33.

Columba lawsonii, Sieber, Isis, No. 67.

Oo-da, Aborigines of Western Australia.

Little Bronze Pigeon, Colonists of Swan River.

Peristera elegans, Gould, Birds of Australia, fol., vol. v. pl. 65.

This species is neither so plentiful nor so widely distributed as the Common Bronze-wing (*Phaps chalcoptera*); it is, however, tolerably abundant in Tasmania, the islands in Bass's Straits, and the whole of the southern portion of the Australian continent, from Swan River on the west to Moreton Bay on the east. In Tasmania it is very numerous, from Circular Head to the north-eastern corner of the island. It affects

the most scrubby localities, giving preference to such as are low and swampy ; and I have never seen it perch on the branches of trees. When flushed it rises very quickly with a loud burring noise similar to that made by the rising of a Partridge. The shortness of its wings and tail, and the extreme depth of its pectoral muscle, render its appearance more plump and round than that of the generality of Pigeons. It is a very difficult bird to shoot, from its inhabiting the denser parts of the scrub, from which it is not easily driven. It flies but little, rarely for a greater distance than to cross a gully or top a ridge before it again abruptly descends into the scrub.

Its food consists of seeds and berries of various kinds, particularly in Tasmania of a plant there called Boobyaller.

I believe it never migrates, but merely removes from one locality to another, as food may be more or less abundant.

Its note, more lengthened than that of the Common Bronze-wing, is a low and mournful strain, and is more often repeated towards the close of the evening than at any other time. As an article of food it is by no means to be despised. On a comparison of this species with the *Phaps chalcoptera*, the two birds will be found to differ materially in structure ; the wings of the present species being shorter, and the tail comprising a smaller number of feathers, than that of the other.

The sexes differ so little in the colouring of their plumage that dissection is requisite to distinguish them.

In Western Australia it has been observed to breed sometimes on the ground, and in a fork of the *Xanthorrhæa* or grass-tree ; the nest being formed of a few small sticks, and the eggs as usual being white and two in number, fifteen lines long by eleven lines broad.

Forehead light chestnut ; lores black ; crown of the head and nape dark grey ; a broad line of rich deep chestnut commences at the posterior part of the eye and unites at the

occiput; on the throat a small gorget-shaped mark of reddish chestnut; all the upper surface rich deep lustrous chestnut, becoming gradually paler on the rump and upper tail-coverts; primaries dark brown, with pale edges, and broadly margined on the base of their external webs with ferruginous; a few of the wing-coverts with an oblong spot of rich lustrous coppery bronze on the outer web near the base, the outline of which towards the extremity of the feather is sharply defined and bounded by a line of whitish grey; others of the coverts are similarly ornamented with a spot of golden-green, and others with deep bluish green, bounded by a more conspicuous line of white; four central tail-feathers brown; the remainder grey at the base and tipped with brown, the two colours separated by a broad band of dull black, which band is continued, but is much less apparent upon the central feathers; sides of the neck and all the under surface grey, which becomes paler on the abdomen and under tail-coverts; irides very dark brown; feet bright pink-red.

Sp. 464. PHAPS HISTRIONICA, *Gould*.

HARLEQUIN BRONZEWING.

Columba (Peristera) histrionica, Gould in Proc. of Zool. Soc., part viii. p. 114.

Peristera histrionica, Gould, *Birds of Australia*, fol., vol. v. pl. 66.

I first met with this new and beautiful Pigeon on the 2nd of December 1839, while encamped on the banks of the Mokai, a river which rises in the Liverpool range, and falls into the Namoi.

I was strolling beside the stream at sunrise, when one of these birds rose from the water's edge, flew to the distance of forty yards, and again alighted on the ground, where it assumed much of the air and actions of a Sand-Grouse (*Pterocles*). A fortnight after this I descended about one hundred and fifty miles down the Namoi, and while traversing the

extensive plains, studded here and there with patches of trees that skirt the Nundawar range, I was suddenly startled by an immense flock of these birds rising before me, and again alighting on the ground at a short distance; finding they would not admit of near approach, I secreted myself, and desired my aboriginal companion Natty to go round and turn the flock towards me: the whole simultaneously rose as before with a loud burring noise, so closely packed, that had they not passed me at a considerable distance, many must have fallen to my shot; as it was I succeeded in obtaining four, two of which were males. About a week afterwards, while returning from a kangaroo hunt on a distant part of the same plain, we approached a small group of Myalls (*Acacia pendula*), and Natty suddenly called out, "Look, massa;" in an instant the air before us seemed literally filled with a dense mass of these birds, which had suddenly risen from under the trees at his exclamation; we had scarcely time to bring our guns to the shoulder before they were seventy or eighty yards off; our united discharge, however, brought down eight additional specimens, all of which, being merely winged and fluttering about, attracted the attention of our kangaroo dogs, and it was with the greatest difficulty they could be prevented from tearing them to pieces; in the midst of the scramble, a Kite, with the utmost audacity, came to the attack, and would doubtless have carried off his share, had not the contents of my second barrel stopped his career. This was the last time I met with the Harlequin Bronzewing. I took every opportunity of making inquiries respecting it of the natives of the interior, and of the stockmen at the out stations, both of whom assured me they had never observed it before the present season. If this assertion be correct, and there seems to be no reason for doubting it, whence had this fine bird made its appearance? May we not reasonably suppose that it had migrated from the central regions of this vast continent, which has yet much in store for future discovery? The great

length of wing which this bird possesses admirably adapts it for inhabiting such districts as those of which the far interior is generally imagined to be composed, since by this means it may readily pass over a vast extent of territory; this great power of flight is also a highly necessary qualification to enable it to traverse the great distances it is probably often necessitated to do in search of water.

On dissecting the specimens obtained, I found their crops half filled with small hard seeds, which they procured from the open plains, but of what kinds I was unable to determine.

Forehead, stripe from behind the eye, forming a circle round the ear-coverts, and a crescent-shaped mark across the throat snow-white; the remainder of the head, throat, and ear-coverts jet-black; all the upper surface, wing-coverts, flanks, and two centre tail-feathers deep cinnamon-brown; edge of the shoulder dull white; spurious wing bluish grey, slightly margined with white; primaries brownish grey, margined on their outer web with rufous at the base, largely marked with the same on the inner web, forming a conspicuous patch on the under surface of the wing, and with an oval spot of white at the tip of each feather; secondaries crossed by a beautiful deep crimson bronze on the outer webs near the tip; lateral tail-feathers bluish grey at the base, passing into black towards the extremity, which is white; breast and centre of the abdomen bluish grey; under tail-coverts light buff; nostrils and bill black; bare skin surrounding the eye purplish black; irides dark brown; frontal scales of the legs and feet lilac-red; hind part flesh-red.

Total length $10\frac{1}{2}$ inches; bill 1; wing 8; tail $3\frac{1}{2}$; tarsi 1.

The female has only a faint indication of the markings which adorn the male, and is altogether much less brilliant in her appearance.

“This beautiful Pigeon,” says Captain Sturt, “is an inhabitant of the interior. It lays its eggs in February, depositing them under any low bush in the middle of the open

plains. In the latter part of March and the beginning of April they collect in large flocks, and live on the seed of the rice-grass, which the natives also collect for food. During the short period this harvest lasts the flavour of this Pigeon is most delicious, but at other times it is indifferent. It flies to water at sunset, but, like the Bronze-wing, only wets the bill. It is astonishing, indeed, that so small a quantity as a bare mouthful should be sufficient to quench its thirst in the burning deserts it inhabits. It left us in the beginning of May, and I think migrated to the N.E., for the further we went to the westward the fewer did we see of it."

Gilbert observed this species in vast flocks on the plains in latitude 19° S.

Mr. Elsey only observed it on the Victoria in April and May.

Mr. White, of Adelaide, informs me that he saw great numbers of this species round Lake Hope in October and a part of November; the birds were then travelling southward in large flocks.

Genus GEOPHAPS, *Gould*.

The members of this genus are peculiar to Australia; they are more terrestrial in their habits than any other form of Pigeons inhabiting that country; incubate on the ground; inhabit the plains and open downs; have white pectoral muscles; and are excellent food for man.

Sp. 465.

GEOPHAPS SCRIPTA.

PARTRIDGE BRONZE-WING.

Columba scripta, Temm. Pl. Col. 187.

—— *inscripta*, Wagl. Syst. Av., *Columba*, sp. 59.

Peristera scripta, Swains. Class. of Birds, vol. ii. p. 349.

Geophaps scripta, Gould, *Birds of Australia*, fol., vol. v. pl. 67.

This Pigeon has more than ordinary claims to the attention

both of the ornithologist and the epicure, since to the first it is of interest as being a typical example of a minor group of the *Columbidæ*, whose habits and economy are very peculiar, and to the second as a most delicate viand for the table. It is unquestionably one of the very best birds I ate while in Australia; and, in my opinion, it is second to none in any other part of the world; for, as in the Wonga-wonga, both the upper and under pectoral muscles are white, juicy and delicately flavoured. It is to be regretted that a bird possessing such high qualifications as an article of food should be so exclusively a denizen of the plains of the interior that it is available to few except inland travellers; for it would be of especial interest to the sportsman from its offering a closer resemblance to the *Gallinaceæ* than any other Pigeon.

I sometimes observed it in pairs, but more frequently in small flocks of from four to six in number, which, when approached, instead of seeking safety by flight, ran off with exceeding rapidity in an opposite direction, and crouched down, either on the bare plain or among any scanty herbage that appeared to offer the best shelter, and where they often laid until all but trodden upon. It was not unfrequently killed by bullock-drivers with their whips, while passing along the roads with their teams. When it does rise, it flies with extreme rapidity, making a loud burring noise with the wings and generally spinning off to another part of the plain, or to the horizontal branch of a tree, on which it immediately squats in the same line with the limb, from which it is not easily distinguished or driven off.

I met with this bird on the Liverpool Plains, whence as far as I proceeded on the Lower Namoi its numbers appeared to increase. I have also heard that it is equally abundant on all the plains and banks of the rivers between New South Wales and the Murray in South Australia; and Mr. Elsey informed me that the Squatter or Partridge Bronze-wing is numerous on the Lower Burdekin and in the scrubs

of the Suttor and Dawson ; but I have never yet observed it in collections either from the northern or western portions of the continent.

The eggs are two in number, and are deposited on the bare ground without any nest. The young both run and fly strongly when they are only as large as a quail, as I satisfactorily ascertained by killing one which rose before me ; but at what bird I had fired I had not the slightest conception until I picked it up.

In speaking of this bird as an inhabitant of the plains, I must not fail to mention that it was far more abundant on such as were intersected by rivers and waterholes ; in fact, water seemed to be essential to its existence. Its chief food is the seeds of various grasses and other small plants, to which are added at some seasons insects and berries.

There is so little difference in the plumage of the sexes, that it is necessary to resort to dissection to distinguish the male from the female.

Head, all the upper surface and chest light brown, the extremities of the wing-coverts and the edges of the primaries being much paler ; the outer webs of several of the greater coverts with a speculum of greenish purple obscured, barred with a darker tint ; chin and throat, a broad stripe from the lower mandible to beneath the eye, another stripe from the posterior angle of the eye down the side of the neck, and a spot on the side of the neck snow-white, the interspaces being jet-black, the latter colour surrounding the eye, and also forming a crescent across the lower part of the throat ; abdomen grey ; flanks white ; all but the two centre tail-feathers greyish brown at the base and largely tipped with black ; bill black ; irides black ; naked skin surrounding the eye bluish lead-colour ; the corners immediately before and behind the eye mealy vinous red ; feet and frontal scales dark purplish vinous red.

Sp. 466.

GEOPHAPS SMITHII.

SMITH'S PARTRIDGE BRONZE-WING.

Columba smithii, Jard. and Selb. Ill. Orn., vol. iii. pl. 104.*Mán-ga*, Aborigines of the Coburg Peninsula.*Partridge Pigeon*, Residents of Port Essington.

Geophaps smithii, Gould, *Birds of Australia*, fol., vol. v. pl. 68.

This species is in every respect a true *Geophaps*, and the accompanying notes by Gilbert show that it closely assimilates in its habits and economy to the type of the genus. It appears to be abundant on the north coast of Australia, which is the only part of the country from which I have yet received it :—

“Like the *G. scripta* this bird, which at Port Essington is termed the Partridge, differs considerably from its congeners in its general habits, flight, voice, mode of incubation, and the character of its newly hatched young. It is rather abundant in all parts of the Peninsula, is mostly seen in small families and always on the ground, unless when disturbed or alarmed; it then usually flies into the nearest tree, generally choosing the largest part of a horizontal branch to perch upon. When it rises from the ground its flight is accompanied with a louder flapping or burring noise than I have observed in any other Pigeon.

“Its note is a coo, so rolled out that it greatly resembles the note of the Quail, and which, like that bird, it scarcely ever utters but when on the ground, where it frequently remains stationary, allowing itself to be almost trod upon before rising. Its favourite haunts are meadows covered with short grass near water, or the edges of newly burnt brush. It would seem that this species migrates occasionally from one part of the country to another; for during the months of September and October not a single individual was to be seen, while at the time of my arrival and for a month after they were so

abundant that it was a common and daily occurrence for persons to leave the settlement for an hour or two and return with several brace ; in the latter part of November they again appeared, but were not so numerous as before ; and in the January and February following they were rarely to be met with, and then mostly in pairs inhabiting the long grasses clothing the moister parts of the meadows.

“ It incubates from August to October, making no nest, but merely smoothing down a small part of a clump of grass and forming a slight hollow, in which it deposits two eggs, which are greenish white, one inch and a quarter long by seven-eighths of an inch in breadth. The young bird on emerging from the egg is clothed with down like the young of the Quail.”

Eyes surrounded with a large naked space of a bright reddish orange colour ; head and all the upper surface olive-brown ; throat white, the tips of the last feathers grey, forming a surrounding margin of that colour ; on the cheeks a large brownish grey spot, nearly insulated by the large space of the eyes being surrounded by a narrow band of white, the feathers of which are tipped with black ; chest reddish brown ; on the centre of the breast a few of the feathers are clear grey, margined at the tip with black ; breast and abdomen purplish olive-brown ; flanks white ; lower part of the abdomen and vent buff ; primaries and secondaries dark brown, margined with pale brown ; the outer webs of the three or four last secondaries and one or two greater coverts for two thirds of of their length from the base rich purple with greenish wavy reflexions ; two centre tail-feathers olive-brown, the remainder deep slate-grey at base and black at the extremity ; under tail-coverts dark brown margined with light brown ; irides of three colours, first a narrow ring of red next the pupil, then a broader ring of pure white, and lastly a narrow one of grey ; bill blackish grey ; legs and feet bluish grey ; back of the tarsi and inner side of the feet yellowish grey.

Genus LOPHOPHAPS, *Reichenbach*

The birds of this form are apparently destined to inhabit the most arid, heated plains; thus even the desert has a peculiar kind of bird-life, and in this instance one of a highly ornamental character, for there are scarcely any birds more graceful than these little plumed Pigeons.

Sp. 467. LOPHOPHAPS PLUMIFERA, *Gould*.

PLUMED BRONZE-WING.

Geophaps plumifera, Gould in Proc. of Zool. Soc., part x. p. 19.

Lophophaps plumifera, Reichenbach.

Geophaps plumifera, Gould, Birds of Australia, fol., vol. v. pl. 69.

I have traced this elegant species from South Australia through the intervening country to Victoria River. The far west is evidently inhabited by the succeeding species of this form.

“It was on the return of my party from the eastern extremity of Cooper’s Creek,” says Captain Sturt, “that we first saw and procured specimens of this beautiful little bird. Its locality was entirely confined to about thirty miles along the banks of the creek in question; it was generally perched on some rock fully exposed to the sun’s rays, and evidently taking a pleasure in basking in the tremendous heat. It was very wild and took wing on hearing the least noise. In the afternoon it was seen running in the grass on the creek side, and could hardly be distinguished from a quail. It never perched on the trees; when it dropped after rising from the ground, it could seldom be flushed again, but ran with such speed through the grass as to elude our search.”

From Gilbert’s journal I extract the following passage:—

“Lat. 17° 30', March 6. I was fortunate enough to kill for the first time *Lophophaps plumifera*. The irides are bright orange, the naked skin before and surrounding the eyes

bright crimson ; the bill dark greenish grey ; the scales of the legs and toes greenish grey ; skin between scales light ashy grey. I only saw the specimen I killed, but afterwards learnt that one of my companions had seen a flock rise precisely like *Geophaps scripta*."

Mr. Elsey, writing from the Victoria, informed me that "this lovely little bird was abundant on the Victoria, especially about rocky holes and exposed hot gullies and on the hot sandy beds of the broad rivers of the Gulf, where it was strutting about in the full glare of the sun, with its crest erect. I have shot six or eight at a time on those rivers. To my fancy this is one of the most graceful and harmoniously coloured birds I have ever seen."

To this I may add that Mr. Bynoe found it in the country between Cape Hotham and the Island of Depuch.

Bill olive-black ; irides yellow ; lores and bare skin round the eye either crimson or orange red, bounded above and below by a narrow line of black ; forehead and a line above the black one over the eye grey ; centre of the crown and lengthened crest-plumes delicate cinnamon ; chin and lower part of the neck black ; centre of the throat and upper part of the ear-coverts white ; lower part of the ear-coverts grey ; chest very rich cinnamon bounded below by a crescentic band of white, to which succeeds a narrow one of black ; centre of the abdomen snow-white ; flanks cinnamon ; under tail-coverts brown, edged with greyish white ; under side of the wings delicate cinnamon ; inner parts of the upper portion of the primaries cinnamon, their outer webs and tips brown ; a beautiful oblong bronzy-purple metal-like mark on three of the secondaries ; back of the neck and mantle alternately rayed with cinnamon and brown, the latter hue not so distinct as the former ; the feathers of the upper portion of the wings rayed with cinnamon, blackish brown and grey, the tips of the feathers being cinnamon, their centres blackish-brown and their bases grey ; rump and upper tail-coverts cinnamon-

brown; basal half of the tail-feathers cinnamon-brown, the apical half black; legs greenish grey inclining to purple.

Total length $8\frac{1}{2}$ inches; bill $\frac{7}{8}$; wing $4\frac{3}{8}$; tail 3; tarsi $\frac{3}{4}$; longest crest-plume $2\frac{7}{8}$.

I have lately seen at Mr. Ward's, in Vere Street, some very fine specimens of this bird, which were procured in the interior of Australia by Mr. Galbraith, of Machrihanish Station, South Australia, and which are now in the possession of his sister, Mrs. E. F. M. Craufurd, of Budleigh Salterton, Devon.

Sp. 468. LOPHOPHAPS FERRUGINEA, *Gould*.

RUST-COLOURED BRONZE-WING.

For a knowledge of this species we are indebted to the researches of T. F. Gregory, Esq., a gentleman whose name, like that of his brother, A. T. Gregory, Esq., will ever be associated with Australia as one of its most successful explorers.

The habitat of the *Lophophaps ferruginea* is the extreme western part of that great country opposite Sharks' Bay and Dirk Hartog's Island.

The following brief note is all I am able to offer to ornithologists respecting this highly interesting bird. It is from the pen of Mr. Gregory, and accompanied the specimen he kindly sent me:—

“I found this species in large numbers on the Gascoigne River. It almost invariably frequents rocky ground near water, and in such situations I have occasionally seen more than five hundred come down to drink in less than half-an-hour. On the wing it exactly resembles the common Partridge, but it is not quite so plump in the body, and does not appear ever to fly in coveys. Its eggs, which are two in number, are generally laid during the months of July and August.”

Both the present and the preceding species are about the size of a Quail, and when their crest-plumes are carried erect must have a very sprightly air and appearance.

Having seen but a single example of this species, I am unable to say if there be any outward difference in the sexes. I suspect there is not, and I am led to this conclusion from an examination of numerous examples of both sexes of its nearly *Lophophaps plumifera*, in which no variation occurs; in all probability, both sexes of the species of this genus are similarly coloured. If we may judge from analogy, we may also infer that the young of these little ground Bronze-wings do not remain callow and helpless for any length of time, but that, like the young of the *Gallinaceæ* generally, they are able to trip over the ground soon after exclusion from the egg.

The *L. ferruginea* differs from *L. plumifera* in the nearly uniform rust-red colouring of its body and in the absence of the broad white pectoral band so conspicuous in the latter.

Bill olive-black; irides yellow; lores and bare skin round the eye either crimson or orange-red, bounded above and below by a narrow line of black; forehead and a line above the black one over the eye grey; centre of the crown and the lengthened crest-plumes cinnamon; chin and lower part of the neck black; centre of the throat and upper part of the ear-coverts white, lower part of the ear-coverts grey, all the under surface deep rust-red; on each side of the chest two or three narrow crescentic bars of black, the longest of which nearly meet in the centre; under tail-coverts brown, edged externally with white; under surface of the wing deep cinnamon; basal portion of the primaries rust-red, their apices brown; a beautiful oblong bronzy-purple metal-like mark on three of the secondaries; back of the neck and mantle alternately rayed with rust-red and dark brown; the feathers of the upper portion of the wings rayed with rusty red, blackish-brown and grey, the tips being rust-red, the centre black and the base grey; rump and upper tail-coverts rusty brown; basal half of the tail-feathers rusty brown, the apical half black; legs greenish grey inclining to purple.

Total length 8 inches; bill $\frac{3}{4}$; wing 4; tail $2\frac{3}{4}$; tarsi $\frac{3}{4}$.

Genus OCYPHAPS, *Gould*.

A genus consisting of a single species whose natural habitat is the interior of Australia, over the vast expanse of which its long pointed wings enable it to pass at pleasure from one district to another whenever a scarcity of food prompts it so to do : although mainly terrestrial in its habits, it is more frequently seen on the trees than the members of the genus *Phaps*.

Sp. 469. OCYPHAPS LOPHOTES.

CRESTED BRONZE-WING.

Columba lophotes, Temm. Pl. Col. 142.

The Crested Pigeon of the Marshes, Sturt's two Exp. to the interior of Southern Australia, vol. i. pl. in p. 24.

Turtur ? lophotes, Selby, Nat. Lib. Orn., vol. v. Pigeons, p. 174, pl. 18.

Ocyphaps lophotes, Gould, *Birds of Australia*, fol., vol. v. pl. 70.

The chasteness of its colouring, the extreme elegance of its form, and the graceful crest which flows from its occiput, all tend to render this Pigeon one of the most lovely members of its family, and it is therefore to be regretted that, owing to its being exclusively an inhabitant of the plains of the interior, it can never become an object of general observation.

As might be supposed, this bird has attracted the notice of all the travellers who have crossed the "Blue Mountains;" Captain Sturt mentions it as being numerous on the plains of Wellington valley, and in the neighbourhood of the Morumbidgee. The locality nearest the coast-line that I know it to inhabit is the country near the bend of the river Murray in South Australia, where it is tolerably abundant ; it abounds on the banks of the Namoi, and is occasionally seen on the Liverpool Plains. It frequently assembles in very large flocks, and when it visits the lagoons or river-sides for water, during the

dry seasons, generally selects a single tree, or even a particular branch, on which to congregate before descending simultaneously to drink.

Its flight is so rapid as to be unequalled by those of any member of the group to which it belongs; an impetus being acquired by a few quick flaps of the wings, it goes skimming off apparently without any further movement of the pinions. Upon alighting on a branch it elevates its tail and throws back its head, so as to bring them nearly together, at the same time erecting its crest and showing itself off to the utmost advantage.

I met with the nest of this species in a low tree, on the great plain near Gundermein on the Lower Namoi, on the 23rd of December 1839; like that of the other species of Pigeon, it was a slight structure of small twigs, and contained two white eggs, which were one inch and a quarter long and nearly an inch broad, upon which the female was then sitting.

Head, face, throat, breast, and abdomen grey; lengthened occipital plumes black; back of the neck, back, rump, flanks, upper and under tail-coverts light olive-brown; the upper tail-coverts tipped with white; sides of the neck washed with pinky salmon-colour; feathers covering the insertion of the wing deep buff, each crossed near the tip with a line of deep black, giving this part of the plumage a barred appearance; greater wing-coverts shining bronzy green, margined with white; primaries brown; the third, fourth, and fifth finely margined on the apical half of their external web with brownish white, the remainder with a narrow line of white bounding the extremities of both webs; secondaries brown on their inner webs, bronzy purple on their outer webs at the base, and brown at the extremity, broadly margined with white; two centre tail-feathers brown, the remainder blackish brown, glossed with green on their outer webs, and tipped with white; irides buffy orange; orbits naked, wrinkled, and of a pink-red; bill olive-black; legs and feet pink-red.

Genus PETROPHASSA, *Gould*.

So little is known respecting the single species of this Australian genus that I am unable to say more than that it inhabits rocky situations near the sea-coast.

Sp. 470. PETROPHASSA ALBIPENNIS, *Gould*.

WHITE-QUILLED ROCK-PIGEON.

Petrophassa albipennis, Gould in Proc. of Zool. Soc., part viii. p. 173.

Petrophassa albipennis, Gould, *Birds of Australia*, fol., vol. v. pl. 71.

This highly singular species of Pigeon is an inhabitant of the most rugged and sterile districts of the north-west coast of Australia. Specimens were sent me by one of the Officers of the 'Beagle,' but, I regret to say, were unaccompanied by any particulars respecting their history. Writing to me from the Victoria River, Mr. Elsey states that it is common among the sandstone cliffs of the ranges. The form of the wing would lead us to imagine that in many parts of its economy this species much resembles those of the members of the genus *Geophaps*; but on these points nothing can be ascertained with certainty, until the productions of those remote parts of Australia have been carefully investigated, a period which, from the inhospitable character of the country, I fear, is far distant.

Crown of the head and neck greyish brown, margined with sandy brown; all the upper surface, chest, and tail rufous brown, the centre of each feather inclining to grey; lores black; abdomen and under tail-coverts chocolate brown; throat clothed with small feathers, white at the tip, black at the base; primaries dark brown at their tips, the basal half pure white; bill and irides blackish brown; feet reddish brown.

Total length $10\frac{1}{2}$ inches; bill $\frac{7}{8}$; wing $5\frac{1}{4}$; tail 5; tarsi $\frac{3}{4}$.

Genus ERYTHRAUCHÆNA, *Bonaparte*.

Few birds are more delicate or elegant in form than the one to which the above generic appellation has been given, and which is the only species known to inhabit Australia.

Sp. 471. ERYTHRAUCHÆNA HUMERALIS.

BARRED-SHOULDERED DOVE.

Columba humeralis, Temm. Pl. Col. 191.

—— *erythrauchen*, Wagl. Syst. Av., *Columba*, sp. 98.

Erythrauchæna humeralis, Bonap. Consp. Gen. Av., tom. ii. p. 93.

Geopelia humeralis, Gould, *Birds of Australia*, fol., vol. v. pl. 72.

There are reasons for believing that the *Erythanchæna humeralis* inhabits the whole of the vast interior of Australia as well as the neighbourhood of the coasts of its northern and eastern portions. In New South Wales it is sparingly dispersed over the Liverpool Plains, where some of the specimens I possess were obtained. As the structure of its legs would indicate, it passes much of its time on the ground, feeding on the seeds of various kinds of grasses and leguminous plants. Not only is it one of the most elegant of the Dove tribe inhabiting Australia, but it is also one of the most tame and docile, if I may judge from the few I observed on the heated plains of New South Wales: their confidence was such that they sometimes perched within two yards of the spot where I was sitting; extreme thirst and a scanty supply of water may, however, have rendered them more tame or bold than they otherwise would have been.

Gilbert states that at Port Essington "this Dove is extremely abundant, inhabiting thickets, swampy grounds, and the banks of running streams. It mostly feeds on the seeds of various kinds of grasses, but when the country becomes burnt it finds an abundant supply of berries in the thickets.

It may often be seen among the mangroves in flocks of several hundreds, and hence its colonial name of Mangrove Dove. It was equally numerous during the whole period of my stay in that part of the country. Any number of specimens may be readily procured, for when disturbed the bird merely flits from branch to branch, or if in an open part of the country to the nearest tree. I did not observe it take anything approaching a sustained flight. Its most common note is a rather loud *coo-coo*, occasionally uttered at long intervals; during the pairing-season the note becomes of a softer tone, and is more rapidly repeated, and its actions very much resemble those of the Common Dove of Europe. It breeds in August, and makes a very slight nest of slender twigs, loosely and carelessly laid across each other on two or three of the lower leaves of the *Pandanus*, the upper leaves of which afford it a shelter from the rays of the sun and from the rain; the eggs are two in number, of a delicate fleshy-white."

The sexes are alike in colouring, but, as is the case with all Doves, the female is smaller than the male.

Forehead, cheeks, sides of the neck and breast delicate grey; occiput, back, wing-coverts, rump, and upper tail-coverts silky brown; back of the neck rufous, every feather of the upper surface bounded at the extremity with a narrow band of black, giving the whole a squamated or scaled appearance; under surface of the shoulder and the inner webs, except their tips, of the primaries and secondaries fine rust-red; outer webs and tips of the inner webs of the primaries and secondaries brown; two centre tail-feathers dark grey, the remainder reddish brown at the base, gradually increasing in intensity towards their tips, those next the centre ones washed with grey on their outer webs, and largely tipped with white; centre of the abdomen white; the remainder of the under surface washed with vinous; irides ochre-yellow; bill and nostrils delicate mealy light blue; naked skin round the eye mealy purple; legs and feet pink red.

Genus **GEOPELIA**, *Swainson*.

A form very generally distributed over the Indian Islands and Australia, and of which two species are peculiar to the latter country ; grassy hills, flats, and extensive plains are the situations these birds affect, consequently in Australia they are almost exclusively confined to the interior ; they pass over the ground in a quiet and peaceful manner, and when disturbed fly to some neighbouring tree, descend again almost immediately, and search about for the minute seeds of annuals and other plants, upon which they principally subsist.

Sp. 472. **GEOPELIA TRANQUILLA**, *Gould*.

PEACEFUL DOVE.

Geopelia tranquilla, Gould, *Birds of Australia*, fol., vol. v. pl. 73.

The interior of the country northward from New South Wales is inhabited by considerable numbers of this pretty little Dove, but it has not yet been met with either in Southern or Western Australia. It was very abundant on the Namoi, particularly on the lower part of that river ; and that its range will extend over a large part of the interior is more than probable.

It is chiefly observed on the ground, feeding on the seeds of the various kinds of plants that grow under the shelter of the thinly-timbered forests bordering the plains.

The only observable difference between the sexes is the smaller size of the female.

Face and throat grey ; occiput, back, and wings ashy brown, each feather with a band of deep velvety black at the extremity ; spurious wings and primaries dark brown ; under surface of the shoulders chestnut ; chest, sides, and back of the neck grey, crossed by numerous narrow bands of black ; abdomen and flanks vinous ; four central tail-feathers ashy

brown, the remainder black, largely tipped with white; irides light ash-grey; bill and orbits bright greyish blue, becoming much paler before and behind the eye; frontal scales of the tarsi and feet dark greenish grey; remainder of the legs and feet reddish flesh-colour.

Total length $8\frac{3}{4}$ inches; bill $\frac{5}{8}$; wing 4; tail $4\frac{3}{4}$; tarsi $\frac{5}{8}$.

Sp. 473. GEOPELIA PLACIDA, *Gould*.

PLACID DOVE.

Geophelia placida, Gould, *Birds of Australia*, fol., vol. i. Introd. p. lxxi.

This bird is abundantly and equally distributed over all parts of the Cobourg Peninsula and the neighbouring islands; its favourite haunts being moist meadows or the grassy banks of small streams, and grass-seeds its principal food. It is usually met with in flocks of from twenty to fifty in number, which, when disturbed, generally fly off to the nearest tree; on alighting they jerk the tail very erect, and utter their slowly-repeated and monotonous double note; at other times they coo very faintly, after the manner of the other members of the family.

The Placid Ground-Dove is nearly one-third less than the *G. tranquilla*, but is so precisely the same in colouring that a description of it is quite unnecessary.

It may not be out of place to mention that many other species of this form of little Ground-Doves occur in the islands immediately to the northward of Australia, in Java, Sumatra, and the Malayan Peninsula; where they form a considerable article of commerce, many of them being caged and sent to Singapore, and, according to Mr. Jerdon, to the bazaars at Calcutta; examples are also frequently brought to England. No bird being more tranquil in confinement, it is everywhere a favourite.

Genus **STICTOPELIA**, *Reichenbach*.

I consider that Dr. Reichenbach was warranted in making the elegant *Columba cuneata* the type of a new genus; it is the only one of the form at present known.

Sp. 474. **STICTOPELIA CUNEATA.****LITTLE TURTLE-DOVE.**

Columba cuneata, Lath. Ind. Orn., Supp. p. 61.

—— *macquarie*, Quoy et Gaim. Voy. de l'Uranie, Ois., t. 31.

—— *spiloptera*, Vig. in Zool. Journ., vol. v. p. 275.

Geopelia cuneata, G. R. Gray, List of Brit. Mus. Coll., part iii. p. 11.

Stictopelia cuneata, Reich. Syst. Av., tab. 250. figs. 1387–1389.

Men-na-brun-ka, Aborigines of Western Australia.

Turtle Dove, Colonists of Swan River.

***Geopelia cuneata*, Gould, Birds of Australia, fol., vol. v. pl. 74.**

I have seen specimens of this elegant little Dove from every one of the Australian colonies. It is rarely met with on the seaside of the mountain ranges, but occurs in considerable numbers on the plains of the interior.

“All that we read or imagine of the softness and innocence of the Dove,” says Captain Sturt, “is realized in this beautiful and delicate little bird; it is common on the Murray and the Darling, and was met with in various parts of the interior. Two remained with us at the Dépôt, in latitude 39° 40', longitude 142°, during a great part of the winter, and on one occasion roosted on the tent-ropes near the fire. Its note is exceedingly plaintive.”

The little Turtle-Dove is more frequently observed on the ground than among the trees; I sometimes met with it in small flocks, but more often in pairs. It runs over the ground with a short bobbing motion of the tail, and while feeding is so remarkably tame as almost to admit of its being taken by the hand, and if forced to take wing it merely flies to the

nearest tree, and there remains motionless among the branches. I not unfrequently observed it close to the open doors of the huts of the stock-keepers of the interior, who, from its being so constantly before them, regard it with little interest.

The nest is a frail but beautiful structure, formed of the stalks of a few flowering grasses, crossed and interwoven after the manner of the other Doves. One sent me from Western Australia is "composed," says Gilbert, "of a small species of knotted everlasting-like plant (*Composita*), and was placed on the overhanging grasses of the *Xanthorrhœa*. During my first visit to this part of the country only two situations were known as places of resort for this species, and I did not meet with more than five or six examples; since that period it has become extremely abundant, and now a pair or two may occasionally be seen about most of the settlers' houses on the Avon, becoming apparently very tame and familiarized to man. It utters a rather singular note, which at times very much resembles the distant crowing of a cock. The term *Men-na-brun-ka* is applied to it by the natives from a traditional idea that the bird originally introduced the *Men-na*, a kind of gum which exudes from a species of *Acacia*, and which is one of the favourite articles of food of the natives."

The eggs are white and two in number, eleven-sixteenths of an inch long by seven-sixteenths broad.

The sexes, although bearing a general resemblance to each other, may be readily distinguished by the smaller size of the female, by the browner hue of her wing-feathers, and by the spotting of her upper surface not being so numerous or so regular as in the male.

The male has the head, neck, and breast delicate grey, passing into white on the abdomen and under tail-coverts; back and scapularies cinnamon-brown; wing-coverts dark grey; each feather of the wing-coverts and scapularies with two spots, one on the edge of either web near the tip, of white encircled with black; spurious wing and primaries

brown, the latter rufous on their inner webs for two-thirds of their length; four centre tail-feathers grey, deepening into black at the extremity and with black shafts; the remainder greyish black at the base, and pure white for the remainder of their length; irides in some instances bright red, and the naked skin round the eyes light scarlet; in others the irides and naked skin round the eyes are pale greenish yellow; bill dark olive brown; feet reddish flesh-colour in some instances, in others yellowish.

The female differs in having the back of the head, neck, and upper surface browner, and the spots on the wings larger than the male.

Genus MACROPYGIA, *Swainson*.

A genus the members of which are distributed over India, Java, New Guinea, Ceram, the Moluccas, and Australia. Only one species, *M. phasianella*, has yet been characterized from the last-mentioned country.

Sp. 475. MACROPYGIA PHASIANELLA.

LARGE-TAILED PIGEON.

Columba phasianella, Temm. Pl. Col. 100.

Macropygia phasianella, Gould, *Birds of Australia*, fol., vol. v. pl. 75.

The interior of the dense brushes are the favourite haunts of this bird, but it occasionally resorts to the crowns of the low hills and the open glades of the forest, where it searches for its food on the ground; on being disturbed it flies to the branches of the nearest tree, spreading out its broad tail at the moment of alighting. From Illawarra to Moreton Bay it is a common and stationary species. It is a fine showy bird in a state of nature, and exhibits itself to great advantage when it rises from the ground to the trees. While traversing the brushes I frequently saw this bird busily engaged

searching on the ground for fallen seeds and berries. Rarely were more than four or five seen at one time, and most frequently it occurred singly or in pairs. Up to the present time, our knowledge of the extent of habitat enjoyed by this bird is very limited; I have never myself seen it in any collections but those made in New South Wales. As its lengthened tarsi would lead us to imagine, it spends much of its time on the ground; and when flushed in the depths of the forest it merely flies to the branch of some low tree, and there remains with little appearance of fear.

Its note is loud, mournful, and monotonous.

The sexes are precisely similar in colour and nearly so in size; dissection, in fact, is necessary to distinguish them.

General plumage rich rusty brown, becoming of a dark brown on the wings; wing-coverts margined with rusty brown; ear-coverts crossed by narrow bars of black; sides and back of the neck glossed with bronzy purple; lateral tail-feathers crossed near the tip by a broad band of black, beyond which the brown colour is paler than at the base; bill dark olive-brown, mealy at the base; irides blue, with an outer circle of scarlet; orbits mealy bluish lilac; feet pink-red.

Family MEGAPODIDÆ.

The habits and economy of the birds comprised in this family are both curious and extraordinary, nor are they less singular in their structure, and in my opinion no group of birds is more isolated. By one of our best ornithologists one of the species was classed with the Vultures; another placed it with *Meleagris*; and a third considered it to be allied to the members of the genus *Rallus*. From the colonists of Australia the three species inhabiting that country have received the trivial names of Brush-Turkey, Native Pheasant, and Jungle-Fowl; but to none of these birds are they in any

way allied. In general appearance the *Megapodidæ* offer a certain degree of alliance to the *Gallinaceæ*; but in the peculiar odour, shape, and colouring of their eggs, and in the mode in which they are incubated, they are totally different, and in some of these respects offer a resemblance to the Tortoises and Turtles. Three species, pertaining to different genera, inhabit Australia, others exist in New Guinea and the neighbouring islands, and extend as far north as the Philippines.

Genus TALEGALLUS, Lesson.

The eastern portion of Australia is the habitat of the solitary species of this form of mound-raising bird.

Sp. 476. TALEGALLUS LATHAMI.

WATTLED TALEGALLUS.

New Holland Vulture, Lath. Gen. Hist., vol. i. p. 32.

Genus *Alectura*, Lath. Ibid., vol. x. p. 455.

Alectura lathamii, Gray, Zool. Misc., No. I. p. 3.

Catheturus australis, Swains. Class. of Birds, vol. ii. p. 206.

Meleagris lindesayii, Jameson, Mem. Wern. Nat. Hist. Soc., vol. vii. p. 473.

Brush-Turkey of the Colonists; *Wee-lah*, Aborigines of the Namoi.

Talegalla lathamii, Gould, Birds of Australia, fol., vol. v. pl. 77.

This singular bird was originally described and figured by Latham in the first volume of his 'General History of Birds,' under the name of *New Holland Vulture*; but, subsequently, he conceived himself in error in classing it with the *Vulturidæ*, and at the end of the tenth volume of the same work placed it among the *Gallinaceæ*, with the generic appellation of *Alectura*: the species was afterwards dedicated to that venerable ornithologist by Dr. Gray, in his 'Zoological Miscellany,' as *Alectura lathamii*.

The generic and specific terms, *Catheturus australis*, were

subsequently applied to it by Swainson, who, in both volumes of his 'Classification of Birds,' replaces it among the *Vulturidæ*, in order, apparently, to establish his own views respecting that family.

The term *Alectura* having been previously employed for a group of Flycatchers, Lesson's genus *Talegallus*, which was published prior to Swainson's *Catheturus*, is necessarily the one adopted.

How far the range of the Wattled Talegallus may extend over Australia is not yet satisfactorily ascertained ; it is known to inhabit various parts of New South Wales, from Cape Howe to Moreton Bay, and Mr. Macgillivray informed me that he had killed it as far up the east coast as Port Molle ; the assaults of the cedar-cutters and others, who frequently hunt through the brushes of Illawarra and Maitland, had, however, nearly extirpated it from those localities when I visited the colony in 1838, and it probably does not now exist there ; but I believe it is still plentiful in the dense and little-trodden brushes of the Manning and Clarence. I was at first led to believe that the country between the mountain-ranges and the coast constituted its sole habitat ; but I was agreeably surprised when I found it in the Liverpool brushes and in the scrubby gullies and sides of the lower hills that branch off towards the interior.

It has often been asserted that Australia abounds in anomalies, and in no instance is the truth of this assertion more fully exemplified than in the history of this very singular bird, respecting the situation of which in the natural system much diversity of opinion, as above noticed, had hitherto prevailed. It was consequently one of the birds which demanded my utmost attention during my visit to Australia ; and, immediately upon its remarkable habits becoming known to me, I published an account of them in the first volume of the 'Tasmanian Journal' for 1840. The remarks therein contained, and which are recapitulated below, comprise all that is known

respecting them, nothing of importance having since been discovered.

The most remarkable circumstance connected with the economy of this species is the fact of its eggs not being incubated in the manner of other birds. At the commencement of spring the Wattled Talegallus scratches together an immense heap of decaying vegetable matter as a depository for the eggs, and trusts to the heat engendered by the process of fermentation for the development of the young. The heap employed for this purpose is collected by the birds during several weeks previous to the period of laying ; it varies in size from two to many cart-loads, and in most instances is of a pyramidal form. The construction of the mound is either the work of one pair of birds or, as some suppose, the united labours of several ; the same site appears to be resorted to for several years in succession, the birds adding a fresh supply of materials each succeeding season.

The materials composing these mounds are accumulated by the bird grasping a quantity in its foot and throwing it backwards to one common centre, the surface of the ground for a considerable distance being so completely scratched over that scarcely a leaf or a blade of grass is left. The mound being completed, and time allowed for a sufficient heat to be engendered, the eggs are deposited in a circle at the distance of nine or twelve inches from each other, and buried more than an arm's depth, with the large end upwards ; they are covered up as they are laid, and allowed to remain until hatched. I have been credibly informed, both by natives and settlers living near their haunts, that it is not an unusual event to obtain half a bushel of eggs at one time from a single mound ; and I have myself seen a native woman bring to the encampment in her net half as many as the spoils of a foraging excursion to the neighbouring scrub. Some of the natives state that the females are constantly in the neighbourhood of the mound about the time the young are likely to be hatched, and

frequently uncover and cover them up again, apparently for the purpose of assisting those that may have appeared; while others have informed me that the eggs are merely deposited, and the young allowed to force their way unassisted. One point has been clearly ascertained, namely, that the young from the hour they are hatched are clothed with feathers, and have their wings sufficiently developed to enable them to fly on to the branches of trees, should they need to do so to escape from danger; they are equally nimble on their legs; in fact, as a moth emerges from a chrysalis, dries its wings, and flies away, so the youthful *Talegallus*, when it leaves the egg, is sufficiently perfect to be able to act independently and procure its own food. This we know from personal observation of the bird in a state of captivity; several old birds having constructed mounds, in which their eggs have been deposited and their young developed, in the Gardens of the Zoological Society in the Regent's Park. I shall always look back with pleasure to the fact of my being the first to make known these singular habits. Although, unfortunately, I was almost too late for the breeding-season, I nevertheless saw several of these hatching-mounds, both in the interior of New South Wales and at Illawarra; in every instance they were placed in the most retired and shady glens, and on the slope of a hill, the part above the mound being scratched clean, while all below remained untouched, as if the birds had found it more easy to convey the materials down than to throw them up. The eggs are perfectly white, of a long oval form, three inches and three-quarters long by two inches and a half in diameter.

When disturbed, the Wattled *Talegallus* readily eludes pursuit by the facility with which it runs through the tangled brush. If hard pressed, or when rushed upon by its great enemy the native dog, it springs upon the lowermost bough of some neighbouring tree, and by a succession of leaps from branch to branch ascends to the top, and either perches there

or flies off to another part of the brush. It is also in the habit of resorting to the branches of trees as a shelter from the mid-day sun—a peculiarity that greatly tends to their destruction; for, like the Ruffed Grouse of America, when assembled in small companies, they will allow a succession of shots to be fired until they are all brought down. Unless some measures be adopted for their preservation, this circumstance must lead to an early extinction of this singular species—an event much to be regretted, since, independently of its being an interesting object for the aviary, it is an excellent bird for the table.

While stalking about the woods the *Talegallus* frequently utters a rather loud clucking noise; but whether this sound is uttered by the female only I could not ascertain; still I think such is the case, and that the spiteful male, who appears to delight in expanding his richly-coloured fleshy wattles and unmercifully thrashing his helpmate, is generally mute.

In various parts of the brush I observed depressions in the earth, which the natives informed me were made by the birds in dusting themselves.

The stomach is extremely muscular, and the crop of one dissected was filled with seeds, berries, and a few insects.

The adults, which are nearly the size of a female Turkey, have the whole of the upper surface, wings, and tail blackish brown; the feathers of the under surface blackish brown at the base, becoming silvery grey at the tip; skin of the head and neck deep pink red, thinly sprinkled with short hair-like blackish-brown feathers; wattle bright yellow, tinged with red where it unites with the red of the neck; bill black; irides and feet brown.

The female, which is about a fourth less than the male in size, is so closely the same in colour as to render a separate description unnecessary. She also possesses the wattle, but not to so great an extent.

Genus *LEIPOA*, *Gould*.

As in the case with *Talegallus*, the only species of this form that has yet been discovered is strictly confined to Australia.

Sp. 477. *LEIPOA OCELLATA*, *Gould*.

OCELLATED *LEIPOA*.

Leipoa ocellata, Gould in Proc. of Zool. Soc., part viii. p. 126.

Ngow, Aborigines of the lowland; *Ngow-oo*, of the mountain districts of Western Australia.

Native Pheasant, Colonists of Western Australia.

Leipoa ocellata, Gould, Birds of Australia, fol., vol. v. pl. 78.

This remarkable bird is among the most important of the ornithological novelties which the exploration of Western and Southern Australia has unfolded to us.

Like the Wattled *Talegallus*, it is rendered highly interesting from the circumstance of its not hatching its own eggs, which, instead of being incubated in the usual way, are deposited in mounds of mixed sand and herbage, and there left for the heating of the mass to develop the young, which, when accomplished, force their way through the sides of the mound and commence an active life from the moment they see the light of day.

The Ocellated *Leipoa* appears to be more peculiarly suited for a plain and open country than for the tangled brush; and it is most curious to observe how beautifully the means employed by Nature for the reproduction of the species is adapted to the situations it is destined to inhabit. The following sketches of its economy, as far as it has yet been ascertained, were sent me by Gilbert and Sir George Grey, and are here given in their own words:—

“Wongan Hills, Western Australia, September 28, 1842.

“This morning I had the good fortune to penetrate into the dense thicket I had been so long anxious to visit in search

of the Leipoa's eggs, and had not proceeded far before the native who was with me told me to keep a good look-out, as we were among the *Ngou-oo's* hillocks; and in half-an-hour after we found one, around which the brush was so thick that we were almost running over it before seeing it. So anxious was I to see the hidden treasures within, that in my haste I threw aside the black fellow and began scraping off the upper part of the mound; this did not at all please him, and he became very indignant, at the same time making me understand 'that as I had never seen this nest before I had better trust to him to get out the eggs, or I should, in my haste and impatience, certainly break them.' I therefore let him have his own way, and he began scraping off the earth very carefully from the centre, throwing it over the side, so that the mound very soon presented the appearance of a huge basin; about two feet in depth of earth was in this way thrown off, when the large ends of two eggs met my anxious gaze; both these eggs were resting on their smaller apex, and the earth round them had to be very carefully removed to avoid breaking the shell, which is extremely fragile when first exposed to the atmosphere. About a hundred yards from this first mound we came upon a second, rather larger, of the same external form and appearance; it contained three eggs. Although we saw seven or eight more mounds, only these two contained eggs: we were too early; a week later and we should doubtless have found many more. To give you an idea of the place these birds choose for their remarkable mode of rearing their young, I will describe it as nearly as I can:—The Wongan Hills are about thirteen hundred feet above the level of the sea, in a north-north-east direction from Drummond's house in the Toodyay: their sides are thickly clothed with a dense forest of *Eucalypti*; and at their base is a thicket, extending for several miles, of upright-growing and thick bushy plants, so high in most parts that we could not see over their tops, and so dense, that if we separated only for a few yards, we were

obliged to cooey, to prevent our straying from each other ; this thicket is again shadowed by a very curious species of dwarf *Eucalyptus* bearing yellow blossoms, and growing from fifteen to thirty feet in height, known to the native as the spear-wood, and of which they make their spears, digging-sticks, dowaks, &c. ; the whole formation is a fine reddish ironstone gravel, and this the Leipoa scratches up from several yards around, and thus forms its mound, to be afterwards converted into a hot-bed for the reproduction of its offspring. The interior of the mound is composed of the finer particles of the gravel mixed with vegetable matter, the fermentation of which produces a warmth sufficient for the purpose of hatching. Mr. Drummond, who had been for years accustomed to hot-beds in England, gave it as his opinion that the heat around the eggs was about 89° . In both the nests with eggs the White Ant was very numerous, making its little covered galleries of earth around and attached to the shell, thus showing a beautiful provision of Nature in preparing the necessary tender food for the young bird on its emergence ; one of the eggs I have preserved shows the White Ants' tracks most beautifully ; the largest mound I saw, and which appeared as if in a state of preparation for eggs, measured forty-five feet in circumference, and if rounded in proportion on the top would have been full five feet in height. I remarked in all the mounds not ready for the reception of eggs the inside or vegetable portion was always wet and cold, and I imagine, from the state of others, that the bird turns out the whole of the materials to dry before depositing its eggs and covering them up with the soil ; in both cases where I found eggs the upper part of the mound was perfectly and smoothly rounded over, so that any one passing it without knowing the singular habit of the bird might very readily suppose it to be an ant-hill: mounds in this state always contain eggs within, while those without eggs are not only *not* rounded over, but have the centres so scooped out that they form a hollow. The eggs

are deposited in a very different manner from those of the *Megapodius* ; instead of each being placed in a separate excavation in different parts of the mound, they are laid directly in the centre, all at the same depth, separated only by about three inches of earth, and so placed as to form a circle. I regret we were so early ; had we been a week later, the probability is I should have found the circle of eggs complete. Is it not singular that all the eggs were equally fresh, as if their development was arrested until the full number was deposited, so that the young might all appear about the same time ? No one considering the immense size of the egg can for a moment suppose the bird capable of laying more than one without at least the intermission of a day, and perhaps even more. Like those of the *Megapodius*, they are covered with an epidermis-like coating, and are certainly as large, being three inches and three quarters in length by two and a half in breadth ; they vary in colour from a very light brown to a light salmon. During the whole day we did not succeed in obtaining sight of the bird, although we saw numerous tracks of its feet, and many places where it had been scratching ; we also saw its tracks on the sand when crossing the dried beds of the swamps at least two miles from the breeding-thicket, which proves that the bird, in procuring its food, does not confine itself to the brushes around its nest, but merely resorts to them for the purpose of incubating. The native informed us that the only chance of procuring the bird was by stationing ourselves in sight of the mound at a little distance, and remaining quiet and immovable till it made its appearance at sundown ; this I attempted, and, with the native, encamped within twenty yards of the mound about an hour before sunset, taking the precaution to conceal ourselves well with bushes from the quick eye of the bird, but leaving just a sufficient opening to get a fair sight with my gun ; in a half-sitting, half-crouching position, I thus remained in breathless anxiety for the approach of the bird I had so long wished to

see, not daring to move a muscle, for fear of moving a branch or making a noise by crushing a dead leaf, till I was so cramped I could scarcely bear the pain in my limbs ; the bird did not however make its appearance, and the native, with the fear of wading through the thicket in darkness (for there was no moon), became so impatient, that he started up and began to talk so loud, and make so much noise, that I was compelled to give up all hopes of seeing the bird that night ; however, just as we were passing the mound we started the bird from the opposite side, but, from the denseness of the thicket and the darkness closing around us, I had no chance of getting a shot at it. Mr. Roe, the Surveyor-General, who examined several mounds during his expedition to the interior in the year 1836, found the eggs nearly ready to hatch in the month of November, and invariably seven or eight in number ; while another authority has informed me of an instance of fourteen being taken from one mound."

In a subsequent letter Gilbert states that the flavour of the egg is very similar to that of the Tortoise or Turtle, and that when mixed with tea its similarity to the peculiar roughness and earthy flavour of that of the Hawk's-bill Turtle is very remarkable.

"Government House, Adelaide, December 12th, 1842.

"MY DEAR MR. GOULD,—I have lately returned from the Murray, where I have been studying the habits and manners of the *Leipoa ocellata*, which is very plentiful in the sandy districts of the scrub. The eyes of the living bird are of a bright, light hazel ; its legs and feet dark brown ; whilst the bare parts of the head and face are of a very delicate and clear blue. The gizzard is very large and muscular ; the inner coats peculiarly horny and hard. Its food consists chiefly of insects, such as *Phasmidæ* and a species of *Cimex* ; it also feeds on the seeds of various shrubs. The entire lungs and intestines of the one which I dissected were full of *Tænioides*. I have never seen any other animal infested with them to any-

thing like the same extent; and yet the bird was perfectly healthy. It possesses the power of running with extraordinary rapidity; it roosts at night on trees, and never flies if it can avoid so doing.

“The mounds they construct are from twelve to thirteen yards in circumference at the base, and from two to three feet in height; the general form being that of a dome. The sand and grass are sometimes scraped up for a distance of from fifteen to sixteen feet from its outer edge.

“The mound appears to be constructed as follows:—A nearly circular hole, of about eighteen inches in diameter, is scratched in the ground to the depth of seven or eight inches, and filled with dead leaves, dead grass, and similar materials; and a large mass of the same substances is placed all round it upon the ground. Over this first layer a large mound of sand, mixed with dried grass, &c., is thrown, and finally the whole assumes the form of a dome, as I have before stated.

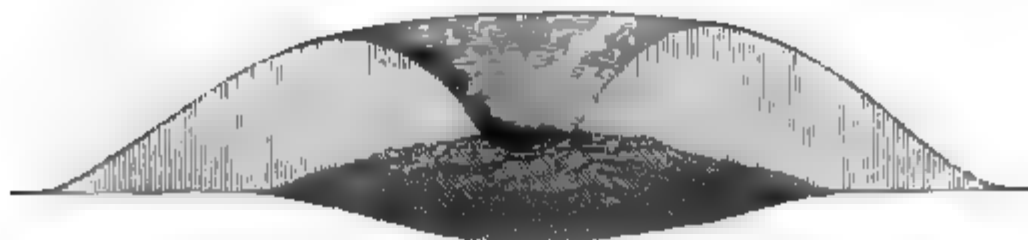
“When an egg is to be deposited, the top is laid open and a hole scraped in its centre to within two or three inches of the bottom of the layer of dead leaves. The egg is placed in the sand just at the edge of the hole, in a vertical position, with the smaller end downwards. The sand is then thrown in again, and the mound left in its original form. The egg which has been thus deposited is therefore completely surrounded and enveloped in soft sand, having from four to six inches of sand between the lower end of the egg and the layer of dead leaves. When a second egg is laid it is deposited in precisely the same plane as the first, but at the opposite side of the hole before alluded to. When a third egg is laid it is placed in the same plane as the others, but, as it were, at the third corner of a square. When the fourth egg is laid, it is still placed in the same plane, but in the fourth corner of the square, or rather of the lozenge, the figure being of this form:—◦◦◦; the next four eggs in succession are placed in the interstices, but always in the same plane, so that at last there

is a circle of eight eggs all standing upright in the sand, with several inches of sand intervening between each. The male bird assists the female in opening and covering up the mound; and, provided the birds are not themselves disturbed, the female continues to lay in the same mound, even after it has been several times robbed. The natives say that the females lay an egg every day.

“ Eight is the greatest number I have heard of from good authority as having been found in one nest; but I opened a mound which had been previously robbed of several eggs, and found that two had been laid opposite to each other in the same plane, in the usual manner; and a third deposited in a plane parallel to that in which the other two were placed, but $4\frac{1}{2}$ inches below them. This circumstance led me to imagine it was possible that there might be sometimes successive circles of eggs in different planes.

“ I enclose three sketches, which will convey to you a complete idea of the form of the mound, and of the manner in which the eggs are placed in it. These sketches were drawn by Mr. Knight, from a rude one of mine, and are very accurate.

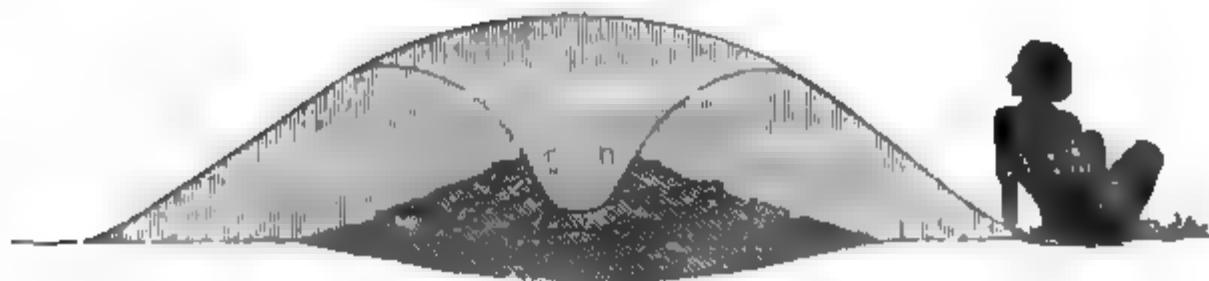
No. 1.



This sketch represents a section through the mound after the sand has been cleared out in such a manner that the eggs could all be removed, and the bottom of the nest of leaves be laid bare. It shows the form of the opening the natives make in the mound when they rob it of its eggs; this opening has, however, been continued below where the eggs are placed, in order to show the form of the interior nest.

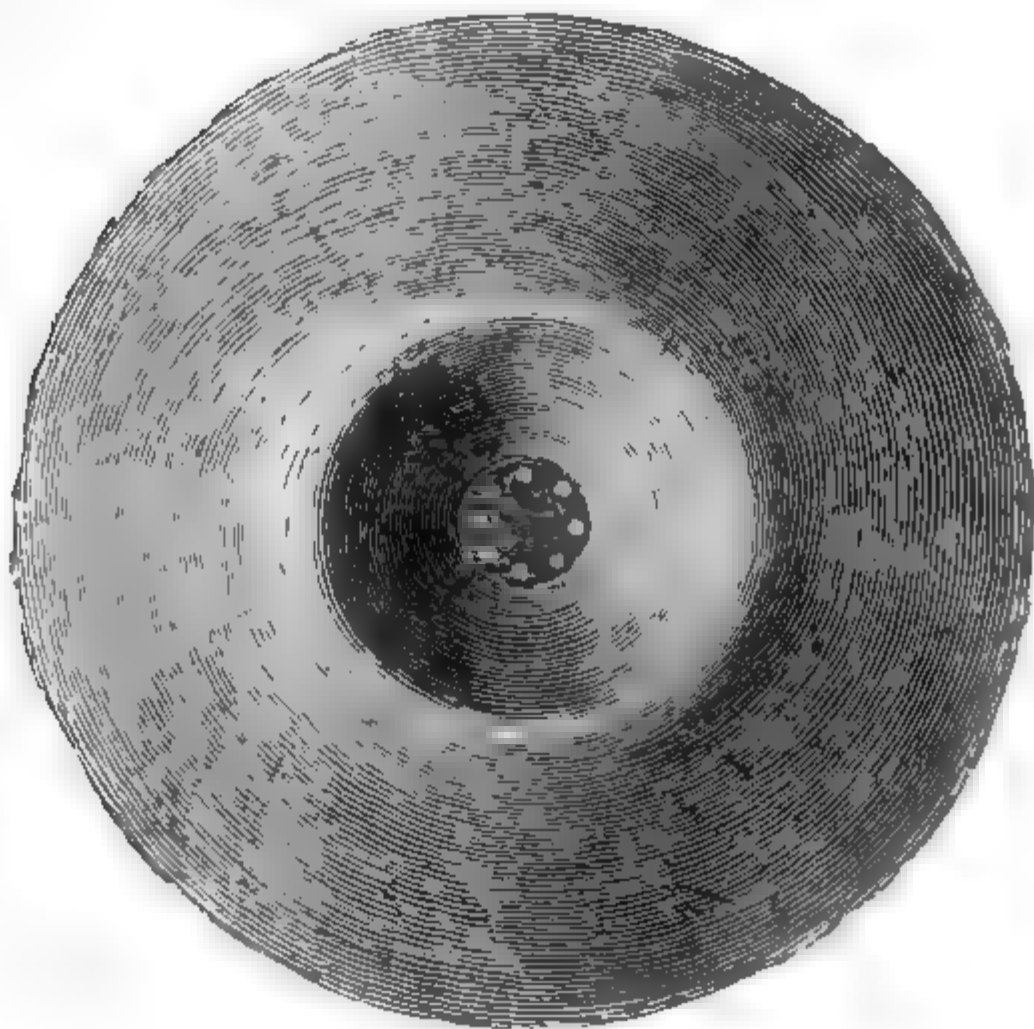
The pale tint represents that portion which is made of sand; the darker tint the part which is made of leaves, &c.

No. 2.



This sketch represents a section through the mound in its undisturbed state; the pale tint indicates the portion of sand, the darker tint the leaves, &c.

No. 3.



This sketch shows a bird's-eye view of the mound, as seen from above; the sand is supposed to have been so far thrown out as to leave the tops of the eggs exposed, and to show them standing upright in their relative positions.

“ One of the mounds of these birds which had been robbed of its eggs on the 11th of November, some of which were quite fresh, had two fresh eggs laid in it on the 27th. of the same month, and the birds were seen at the nest on the morning of the 28th, apparently for the purpose of laying, when the male bird was shot.

“ Sometimes several of these mounds are constructed close to one another. I found two within 200 or 300 yards; and have seen five within the distance of four or five miles. They were built in precisely the same situations that I have seen them in other parts of the continent, that is, in a sandy scrubby country, the site of the mound being in some little open glade, in the very thickest part of the scrub.

“ The eggs are of a light pink, the colour being brightest and most uniform when freshly laid. As the time of hatching approaches they become discoloured, and marked in places with dark spots.

“ The greatest length of these eggs is about . $3\frac{6}{10}$ inches.

„ breadth „ . . $2\frac{2}{10}$ „

“ Circumference in direction of length . . . 10 „

„ „ breadth . . . $7\frac{2}{10}$ „

“ The temperature of the nests I have examined has always been warm; not so much so, however, as I should have thought necessary for the purpose of hatching eggs.

“ There are two great peculiarities about these eggs; the first is, that both ends are of nearly the same size, which form is peculiarly adapted to the position in which they are always placed; the egg being compressed in every part as nearly as possible towards the axis, in which the centre of gravity lies, there is the least possible tendency to its equilibrium being destroyed when it is placed in a vertical position. A second peculiarity is the extreme thinness of the shell, and its consequent fragility. This is so great, that, unless the egg is handled with the greatest care, it is sure to be broken; and every effort which has been made to hatch

these eggs under domestic fowls has failed, the egg having in every instance been broken by the bird under which it was placed.

“ The native name for the bird on the Murray River is *Marrak-ko* or *Marra-ko*; in Western Australia the name of the bird is *Ngow-o* or *Ngow*. The name in Western Australia is given from the tuft on its head, *Ngoweer* meaning a tuft of feathers.

“ I have found this bird in different parts of that portion of Australia included between the 26th and 36th parallels of south latitude, and the 113th and 141st parallels of east longitude, and I think that there is every probability that it inhabits a much wider range. It is found in all the scrubby districts of South Australia.

“ The farthest point north at which I have seen the breeding-places of this bird is Gantheaume Bay. The natives of King George’s Sound say the bird exists in that neighbourhood. I have never fallen in with its nests but in one description of country, viz. where the soil was dry and sandy, and so thickly wooded with a species of dwarf *Leptospermum*, that if you stray from the native paths, it is almost impossible to force your way through.

“ Yours truly,

“ G. GREY.”

“ December 14th.

“ P.S.—I have, by cross-examination of several natives, elicited the following account of this bird :—

“ There is only one male and one female to each mound : they repair an old mound, and do not build a new one ; both assist in scratching the sand to the nest. The female commences laying about the beginning of September, or when the spear-grass begins to shoot. Both sexes approach the nest together when the female is about to lay, and they take an equal share in the labour of covering and uncovering the mound. After every sunrise the female lays an egg, and lays

altogether from eight to ten. If the natives rob the mound, the female will lay again in the same nest, but she will only lay the full number of eggs twice in one summer. From the commencement of building, until the last eggs are hatched, four moons elapse (this would give a very long period of time before the eggs were hatched). The young one scratches its way out alone; the mother does not assist it. They usually come out one at a time; occasionally a pair appear together. The mother, who is feeding in the scrub in the vicinity, hears its call and runs to it. She then takes care of the young one as a European hen does of its chick. When the young are all hatched, the mother is accompanied by eight or ten young ones, who remain with her until they are more than half-grown. The male bird does not accompany them. The two sexes have different calls: that of the female is constantly uttered while she walks about in the scrub with her young ones.

“The natives frequently find the eggs and nests, but they seldom see the old birds, which are very timid and quick-sighted. They run very fast, like the Emu, roost on trees, and live for a long time without water, but drink when it rains. The natives state that the *Entozoa* which I found in the bird mentioned above were unusual, and that it must have been in ill health.

“It is a remarkably stout, compact bird. and appears, when alive, to have as large a body as the female Turkey, but it is shorter on the legs.”

Besides the above valuable notes by Gilbert and Sir George Grey, Mr. Richard Schomburgk has kindly sent me a copy of the ‘*Leopoldina*,’ Haft iii., October 1862, containing a communication from him respecting this bird, which, in the main, agrees with the above statements; but he has been led to believe that an interval of three or four days elapses between the laying of the eggs by one female; he also particularly remarks upon the base of the mound being sunk in the

ground to the depth of twenty or twenty-four inches, and the cavity filled with leaves of the *Eucalypti*, on the top of and surrounding which the mound of sand and mixed herbage is raised. Mr. Schomburgk also states that an egg he took home and placed under a domestic hen was hatched the next day, and the young bird appeared covered with feathers and capable of at once obtaining its own food.

The Ocellated Leipoa is altogether a more slender and elegantly formed bird than the Wattled Talegallus, and moreover differs from that bird in having the head and neck thickly clothed with feathers, and in being adorned with a beautifully variegated style of colouring.

Head and crest blackish brown; neck and shoulders dark ash-grey; the fore part of the former, from the chin to the breast, marked by a series of lanceolate feathers, which are black, with a white stripe down the centre; back and wings conspicuously marked with three distinct bands of greyish white, brown, and black near the tip of each feather, the marks assuming an ocellate form, particularly on the tips of the secondaries; primaries brown, their outer webs marked with zigzag lines of darker brown; rump and upper tail-coverts brownish grey, the feathers of the latter transversely marked with two or three zigzag lines near their tip; all the under surface light buff, the tips of the flank-feathers barred with black; tail blackish brown, broadly tipped with buff; bill black; feet blackish brown.

Total length 24 inches; bill $1\frac{1}{2}$; wing 12; tail $8\frac{1}{2}$; tarsi $2\frac{1}{2}$.

The female so nearly resembles the male in the colouring and general markings of her plumage, that a separate description is quite unnecessary; I may remark, however, that she is somewhat smaller in size.

Genus MEGAPODIUS, *Quoy et Gaimard*.

The members of this genus inhabit many of the Indian and Philippine Islands, and one species is found in Australia. It is said that the females of some species associate in bands during the night and deposit their eggs in the sand of the sea-shore to the depth of two or three feet; that the successive deposits of eggs amount to a hundred or more, and are left to be hatched by the solar rays.

Sp. 478. MEGAPODIUS TUMULUS, *Gould*.

AUSTRALIAN MEGAPODE.

Megapodius tumulus, Gould in Proc. of Zool. Soc., part x. p. 20.

Ooregoorgā, Aborigines of the Cobourg Peninsula.

Jungle-fowl, Colonists of Port Essington.

Megapodius tumulus, Gould, *Birds of Australia*, fol., vol. v. pl. 79.

The discovery of a species of *Megapodius* in Australia is no more than might have been expected, considering that New Guinea and the adjacent islands are the great nursery of this extraordinary tribe of birds.

When the *Megapodius tumulus* first came under my observation I conceived it to be the *M. rubripes* of Temminck, and it was not until I had examined specimens of that species in the Museums of Paris and Leyden that I was satisfied of its being distinct. Its much greater size and more than proportionately powerful legs are among the specific differences which will be observable by those who may feel disposed to institute a comparison. Interesting as this bird must be to every naturalist, to myself it is peculiarly so, since the valuable notes on its habits and economy, which happily I am enabled to give, fully confirm all that I had previously asserted respecting the extraordinary mode of incubation of the *Talegallus*, verifying the opinion I have before expressed, that

Megapodius, *Talegallus*, and *Leipoa* are most nearly allied genera, forming part of a great family of birds, whose range will be found to extend from the Philippines through the islands of the Indian Archipelago to Australia.

The *Megapodius tumulus* is rather numerous spread over the whole of the Cobourg Peninsula on the north coast of the Australian continent; future research will doubtless require us to assign to it a much wider range, probably over many of the islands lying off the east coast.

The following account of its habits is taken from Gilbert's notes; and, novel and extraordinary as those of *Talegallus* and *Leipoa* may have been considered, this will be read with even greater interest:—

“On my arrival at Port Essington my attention was attracted to numerous immense mounds of earth, which were pointed out to me by some of the residents as the tumuli of the aborigines; on the other hand, I was assured by the natives that they were formed by the Megapode for the purpose of incubating its eggs: their statement appeared so extraordinary, and so much at variance with the general habits of birds, that no one in the settlement believed them or took sufficient interest in the matter to examine the mounds, and thus to verify or refute their accounts; another circumstance which induced a doubt of their veracity was the great size of the eggs brought in by the natives as those of this bird. Aware that the eggs of *Leipoa* were hatched in a similar manner, my attention was immediately arrested by these accounts, and I at once determined to ascertain all I possibly could respecting so singular a feature in the bird's economy; and, having procured the assistance of a very intelligent native, who undertook to guide me to the different places resorted to by the bird, I proceeded on the sixteenth of November to Knocker's Bay, a part of Port Essington Harbour comparatively but little known, and where I had been informed a number of these birds were always to be

seen. I landed beside a thicket, and had not proceeded far from the shore ere I came to a mound of sand and shells, with a slight mixture of black soil, the base resting on a sandy beach, only a few feet above high-water mark; it was enveloped in the large yellow-blossomed *Hibiscus*, was of a conical form, twenty feet in circumference at the base, and about five feet in height. On pointing it out to the native and asking him what it was, he replied 'Oooregoorgā Rambal,' Megapode's house or nest. I then scrambled up the sides of it, and to my extreme delight found a young bird in a hole about two feet deep; it was lying on a few dry withered leaves, and appeared to be only a few days old. So far I was satisfied that these mounds had some connexion with the bird's mode of incubation; but I was still sceptical as to the probability of these young birds ascending from so great a depth as the natives represented; and my suspicions were confirmed by my being unable to induce the native, in this instance, to search for the eggs, his excuse being that 'he knew it would be useless, as he saw no traces of the old birds having recently been there.' I took the utmost care of the young bird, intending to rear it if possible; I therefore obtained a moderately-sized box, and placed in it a large portion of sand. As it fed rather freely on bruised Indian corn, I was in full hopes of succeeding; but it proved of so wild and intractable a disposition that it would not reconcile itself to such close confinement, and effected its escape on the third day. During the period it remained in captivity it was incessantly occupied in scratching up the sand into heaps; and the rapidity with which it threw the sand from one end of the box to the other was quite surprising for so young and small a bird, its size not being larger than that of a small Quail. At night it was so restless that I was constantly kept awake by the noise it made in its endeavours to escape. In scratching up the sand it only used one foot, and having grasped a handful as it were, the sand

was thrown behind it, with but little apparent exertion, and without shifting its standing position on the other leg; this habit seemed to be the result of an innate restless disposition and a desire to use its powerful feet, and to have but little connexion with its feeding; for although Indian corn was mixed with the sand, I never detected the bird in picking any of it up while thus employed.

“I continued to receive the eggs without having an opportunity of seeing them taken from the mound until the 6th of February, when on again visiting Knocker’s Bay I had the gratification of seeing two taken from a depth of six feet, in one of the largest mounds I had then seen. In this instance the holes ran down in an oblique direction from the centre towards the outer slope of the hillock, so that, although the eggs were six feet deep from the summit, they were only two or three feet from the side. The birds are said to lay but a single egg in each hole, and after the egg is deposited the earth is immediately thrown down lightly until the hole is filled up; the upper part of the mound is then smoothed and rounded over. It is easily known when a Megapode has been recently excavating, from the distinct impressions of its feet on the top and sides of the mound, and the earth being so lightly thrown over, that with a slender stick the direction of the hole is readily detected, the ease or difficulty of thrusting the stick down indicating the length of time that may have elapsed since the bird’s operations. Thus far it is easy enough; but to reach the eggs requires no little exertion and perseverance. The natives dig them up with their hands alone, and only make sufficient room to admit their bodies, and to throw out the earth between their legs; by grubbing with their fingers alone they are enabled to follow the direction of the hole with greater certainty, which will sometimes, at a depth of several feet, turn off abruptly at right angles, its direct course being obstructed by a clump of wood or some other impediment. Their patience is, however, often put to

severe trials. In the present instance the native dug down six times in succession to a depth of at least six or seven feet without finding an egg, and at the last attempt came up in such a state of exhaustion that he refused to try again; but my interest was now too much excited to relinquish the opportunity of verifying the native's statements, and by the offer of an additional reward I induced him to make another effort: this seventh trial proved successful, and my gratification was complete, when the native with equal pride and satisfaction held up an egg, and after two or three more attempts produced a second; thus proving how cautious Europeans should be of disregarding the narratives of these poor children of nature, because they happen to sound extraordinary or different from anything with which they were previously acquainted.

“ I revisited Knocker's Bay on the 10th of February, and having with some difficulty penetrated into a dense thicket of cane-like creeping plants, I suddenly found myself beside a mound of gigantic proportions. It was fifteen feet in height and sixty in circumference at the base, the upper part being about a third less, and was entirely composed of the richest description of light vegetable mould; on the top were very recent marks of the bird's feet. The native and myself immediately set to work, and after an hour's extreme labour, rendered the more fatiguing from the excessive heat, and the tormenting attacks of myriads of mosquitoes and sand-flies, I succeeded in obtaining an egg from a depth of about five feet; it was in a perpendicular position, with the earth surrounding and very lightly touching it on all sides, and without any other material to impart warmth, which in fact did not appear necessary, the mound being quite warm to the hands. The holes in this mound commenced at the outer edge of the summit, and ran down obliquely towards the centre: their direction therefore is not uniform. Like the majority of the mounds I have seen, this was so enveloped in thickly foliated trees as to preclude the possibility of the sun's rays reaching any part of it.

“ The mounds differ very much in their composition, form, and situation : most of those that are placed near the water’s edge were formed of sand and shells without a vestige of any other material, but in some of them I met with a portion of soil and decaying wood ; when constructed of this loose material they are very irregular in outline, and often resemble a bank thrown up by a constant heavy surf. One remarkable specimen of this description, situated on the southern side of Knocker’s Bay, has the appearance of a bank, from twenty-five to thirty feet in length, with an average height of five feet ; another even more singular is situated at the head of the harbour, and is composed entirely of pebbly iron-stone, resembling a confused heap of sifted gravel ; into this I dug to the depth of two or three feet without finding any change of character ; it may have been conical originally, but is now without any regularity, and is very extensive, covering a space of at least a hundred and fifty feet in circumference. These remarkable specimens would, however, seem to be exceptions, as by far the greater number are entirely formed of light black vegetable soil, are of a conical form, and are situated in the densest thickets. Occasionally the mounds are met with in barren, rocky and sandy situations, where not a particle of soil similar to that of which they are composed occurs for miles round : how the soil is produced in such situations appears unaccountable ; it has been said that the parent birds bring it from a great distance ; but as we have seen that they readily adapt themselves to the difference of situation, this is scarcely probable : I conceive that they collect the dead leaves and other vegetable matter that may be at hand, and which decomposing forms this particular description of soil. The mounds are doubtless the work of many years, and of many birds in succession ; some of them are evidently very ancient, trees being often seen growing from their sides ; in one instance I found a tree growing from the middle of a mound which was a foot in diameter. I endeavoured to glean from the natives how

the young effect their escape ; but on this point they do not agree ; some asserting that they find their way unaided ; others, on the contrary, affirmed that the old birds, knowing when the young are ready to emerge from their confinement, scratch down and release them.

“ The natives say that only a single pair of birds are ever found at one mound at a time, and such, judging from my own observation, I believe to be the case ; they also affirm that the eggs are deposited at night, at intervals of several days, and this I also believe to be correct, as four eggs taken on the same day, and from the same mound, contained young in different stages of development ; and the fact that they are always placed perpendicularly is established by the concurring testimony of all the different tribes of natives I have questioned on the subject.

“ The Megapode is almost exclusively confined to the dense thickets immediately adjacent to the sea-beach ; it appears never to go far inland, except along the banks of creeks. It is always met with in pairs or quite solitary, and feeds on the ground, its food consisting of roots, which its powerful claws enable it to scratch up with the utmost facility, and also of seeds, berries, and insects, particularly the larger species of coleoptera.

“ It is at all times a very difficult bird to procure ; for although the rustling noise produced by its stiff pinions when flying may be frequently heard, the bird itself is seldom to be seen. Its flight is heavy and unsustained in the extreme ; when first disturbed it invariably flies to a tree, and on alighting stretches out its head and neck in a straight line with its body, remaining in this position as stationary and motionless as the branch upon which it is perched ; if, however, it becomes fairly alarmed, it takes a horizontal but laborious flight for about a hundred yards, with its legs hanging down as if broken. I did not myself detect any note or cry ; but, from the natives' description and imitation of it, it

much resembles the clucking of the domestic fowl, ending with a scream like that of the Peacock.

“ I observed that the birds continued to lay from the latter part of August to March, when I left that part of the country ; and, according to the testimony of the natives, there is only an interval of about four or five months, the dryest and hottest part of the year, between their seasons of incubation. The composition of the mound appears to influence the colouring of a thin epidermis with which the eggs are covered, and which readily chips off, showing the true shell to be white ; those deposited in the black soil are always of a dark reddish brown, while those from the sandy hillocks near the beach are of a dirty yellowish white ; they differ a good deal in size, but in form they all assimilate, both ends being equal ; they are three inches and five lines long by two inches and three lines broad.”

The following interesting account of the breeding-places of this remarkable bird has been transmitted to me by Mr. John Macgillivray as the result of his observations on Nogo or Megapodius Island in Endeavour Straits. It will be seen that its range is more extensive than I had assigned to it :—

“ The most southern locality known to me for this singular bird is Haggerston Island (in lat. $12^{\circ} 3'$ south), where I observed several of its mounds of very large size, but did not see any of the birds. During the survey of Endeavour Straits in H.M.S. ‘Bramble,’ I was more fortunate, having succeeded in procuring both male and female on the island marked ‘Nogo’ upon the chart, where I resided for several days for that sole purpose. On this small island, not more than half a mile in length, rising at one extremity into a low rounded hill densely covered with jungle (or what in New South Wales would be called ‘brush’), three mounds, one of them apparently deserted before completion, were found. The two others were examined by Mr. Jukes and myself. The most recent, judging from the smoothness of its sides and the want

of vegetable matter, was situated upon the crest of the hill, and measured 8 feet in height (or $13\frac{1}{2}$ from the base of the slope to the summit) and 77 feet in circumference. In this mound, after several hours' hard digging into a well-packed mass of earth, stones, decaying branches and leaves and other vegetable matter, and the living roots of trees, we found numerous fragments of eggs, besides one broken egg containing a dead and putrid chick, and another whole one, which proved to be addled. All were imbedded at a depth of *six feet* from the nearest part of the surface, at which place the heat produced by the fermentation of the mass was considerable. The egg, $3\frac{1}{4}$ by $2\frac{1}{8}$ inches, was dirty brown, covered with a kind of epidermis, which easily chipped off, exposing a pure white surface beneath. Another mound, situated at the foot of the hill close to the beach, measured no less than 150 feet in circumference; and to form this immense accumulation of materials the ground in the vicinity had been scraped quite bare by the birds, and numerous shallow excavations pointed out whence the materials had been derived. Its form was an irregular oval, the flattened summit not being central as in the first instance, but situated nearer the larger end, which was elevated 14 feet from the ground, the slope measuring in various directions 18, $21\frac{1}{2}$, and 24 feet. At Port Lihou, in a small bay a few miles to the westward, at Cape York and at Port Essington, I found other mounds which were comparatively low, and appeared to have been dug into by the natives. The great size the tumuli (which are probably the work of several generations) have attained on Haggerston and Nogo Islands arises doubtless from those places being seldom visited by the aborigines. I found several eggs of large size in the ovarium of a female shot in August, while the condition of the oviduct showed that an egg had very recently passed; hence it is probable that, in spite of their great comparative size, one bird lays several; but whether each mound is resorted to by more than one pair, I had not the means of ascertaining.

“ Few birds are more wary and less easily procured than the *Megapodius* : it inhabits the belts of brush along the coast, and I never found the tumulus at a greater distance from the sea than a few hundred yards. When disturbed it seldom rises at once, unless on the margin of a thicket, but runs off to some distance and then takes to wing, flying heavily, but without any of the whirring noise of the true *Gallinaceæ*. It seldom takes a long flight, and usually perches on a tree, remaining there in a crouching attitude with outstretched neck, but flying off again upon observing any motion made by its pursuer ; and it is only by cautiously sneaking up under cover of the largest trees that it can be approached within gun-shot. As an example of its shyness, I may mention that a party of three persons, scattered about in a small jungle on Nogo Island, for the purpose of shooting the *Megapodius*, did not see a single bird, although they put up several, one of which came towards me and perched, unconscious of my presence, within twenty yards. At Port Essington I have shot this bird among mangroves, the roots of which were washed by the sea at high water ; and Capt. F. P. Blackwood killed one while running on the mud in a similar locality, in both instances close to a mound. I never witnessed the escape of the young from the mound ; but one, as large as a quail, and covered with feathers, was brought to Lieut. Ince by a native, who affirmed that he had dug it out along with several eggs.

“ Iris yellowish brown ; stomach a complete gizzard, being thick and muscular, containing small quartz pebbles, small shells (*Helix* and *Bulimus*), and black seeds ; intestine 34 inches in length, of the size of a goose-quill, and nearly uniform in thickness, much twisted and contracted at intervals ; cæcum slender, dilated at the extremity, and $4\frac{6}{8}$ inches in length.”

The late Mr. Elsey informed me that “ the mounds of this bird were observed in the dense bottle-scrubs of the lower

Burdekin; always in localities where I could not examine them; never in open ground. They abound in the scrubs about the stations on the Dawson and Mackenzie."

Head and crest very deep cinnamon-brown; back of the neck and all the under surface very dark grey; back and wings cinnamon-brown; upper and under tail-coverts dark chestnut-brown; tail blackish brown; irides generally dark brown, but in some specimens light reddish brown; bill reddish brown, with yellow edges; tarsi and feet bright orange, the scales on the front of the tarsi from the fourth downwards and the scales of the toes dark reddish brown.

The size of this bird is about that of a hen Pheasant (*Phasianus colchicus*).

Family TURNICIDÆ.

In outward appearance the *Turnices* are seemingly allied to the Quails and Partridges, but no real affinity exists between them; neither are they, in my opinion, allied to the Tinamous, with which they have been associated. Those persons who have seen much of these birds in a state of nature cannot have failed to notice their many singular actions and manners, while their mode of nidification, the number and colour of their eggs, must have no less interested them. Although, of course, they must be placed with the *Gallinaceæ*, we cannot shut our eyes to their Plover-like economy.

Genus TURNIX, *Bonnaterre*.

However widely the members of this genus are dispersed, inhabiting, as one or other of them do, most of the Indian Islands, the Peninsula of India, Europe, and Africa, in Australia we find the species more numerous than elsewhere; they not only inhabit every part of the continent that has yet been explored, but they extend their range to the islands adjacent to the coast and even to Tasmania; some species

enjoy a wide range across the country from east to west, while others are very local ; grassy plains and stony ridges thinly interspersed with scrubs and grasses are the situations they frequent ; their eggs are invariably four in number, and rather pointed in form ; their only nest is a few grasses placed in a hollow on the ground.

Sp. 479. TURNIX MELANOGASTER, *Gould*.

BLACK-BREASTED TURNIX.

Hemipodius melanogaster, Gould in Proc. of Zool. Soc., part v. p. 7.

Hemipodius melanogaster, Gould, Birds of Australia, fol., vol. v. pl. 81.

I regret that, never having seen this species in a state of nature, I am unable to render any account of its habits and economy. It is a native of the eastern portion of Australia ; and the specimens in my collection were all procured at Moreton Bay. The sexes present considerable difference in their size and markings, the male being the smallest and being destitute of the black colouring which distinguishes the female. It is about half the size of an English Partridge, and is the largest species of the genus yet discovered.

Crown of the head, ear-coverts, throat and centre of the abdomen black ; over each eye extends a line of feathers having each a small white spot at the tip ; this line extends to the nape, which part is also thickly spotted with white on a black and chestnut-coloured ground ; feathers on the sides of the chest and flanks black, having a large crescent-shaped marking of white near the tip ; mantle and upper part of the back rich chestnut brown, each feather having a spot of white and a stripe of black on each side, and barred with black at or near the tip ; shoulders, greater and lesser wing-coverts rufous brown, each feather having a white spot surrounded with a black line ; primaries dark brown ; thighs and upper and

under tail-coverts brown, freckled and crossed with black ; bill light brown ; feet flesh-colour.

Total length $8\frac{1}{2}$ inches ; bill 1 ; wing $4\frac{1}{2}$; tail $\frac{3}{4}$; tarsi $1\frac{1}{8}$.

Sp. 480.

TURNIX VARIUS.

VARIED TURNIX.

Perdix varia, Lath. Ind. Orn., Supp. p. lxiii.

New Holland Partridge, Lath. Gen. Syn. Supp., vol. ii. p. 283.

Varied Quail, Lath. Gen. Hist., vol. viii. p. 344, no. 88.

Hemipodius varius, Temm. Pl. Col., 454. f. 1.

Turnix varius, Vieill. 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. xxxiv.

Moó-ro-lum, Aborigines of the lowland districts of Western Australia.

Painted Quail, Colonists of Tasmania and Swan River.

Hemipodius varius, Gould, Birds of Australia, fol., vol. v. pl. 82.

Among the game birds of Australia the Varied Turnix plays a rather prominent part, for although its flesh is not so good for the table as that of the little Partridge and Quail, *Synoicus australis* and *Coturnix pectoralis*, it is a bird which is not to be despised when the game-bag is emptied at the end of a day's sport, for it forms an acceptable variety to its contents. Although it does not actually associate with either of the birds mentioned above, it is often found in the same districts, and all three species may be procured in the course of a morning's walk in many parts of New South Wales, Victoria and South Australia, where it frequents sterile stony ridges, interspersed with scrubby trees and moderately thick grass.

It is also very common in all parts of Tasmania suitable to its habits, hills of moderate elevation and of a dry stony character being the localities preferred ; it is also numerous on the sandy and sterile islands in Bass's Straits. Specimens from Western Australia, which at first sight appear to be identical with the bird here figured, are found to be smaller

in size and to differ in their markings, and they will probably prove to be a distinct species. Tasmanian specimens, having an average weight of five ounces each, are rather larger than those of New South Wales; no difference, however, occurs in their markings, and I consider them to be mere local varieties: no example has yet come under my notice from the north coast, and the range of the species doubtless does not extend to within several degrees of that latitude.

It runs remarkably quick, and when flushed flies low, its pointed wings giving it much the appearance of a Snipe or Sandpiper. When running or walking over the ground the neck is stretched out and the head carried very high, which together with the rounded contour of the back give it a very grotesque appearance. The breeding-season commences in August or September and terminates in January, during which period at least two broods are reared. The eggs are invariably four in number, and are either deposited on the bare ground or in a slightly constructed nest of grasses, placed in some shallow depression, not unfrequently under the lee of a stone or at the foot of a tuft of grass; they are more pointed than those of other gallinaceous birds, are of a very pale buff, very minutely and thickly spotted and freckled with reddish brown, chestnut, and purplish grey, and are one inch and a quarter long by one inch broad.

The note of the Varied Turnix is a loud and plaintive sound, which is often repeated, particularly during the pairing-season.

One very remarkable feature connected with this bird, and indeed with all the species of the genus, is the large size of the female when compared with that of the male; no difference however exists in their colour and markings.

The young run as soon as they are hatched, and their appearance then assimilates so closely to that of the young Partridges and Quails that they can scarcely be distinguished. The pretty downy coat with which they are then covered soon

gives place to feathers, whose markings and colours resemble, but are less brilliant than those of the adult.

The food of this species consists of insects, grain, and berries; of the former many kinds are eaten, but locusts and grasshoppers form the principal part; a considerable quantity of sand is also found in the gizzard, which is very thick and muscular.

The adults have the crown of the head, nape, and forehead rich brown, spotted with white, and transversely rayed with large markings of brown; feathers of the cheeks and a stripe over each eye white, slightly fringed with black at their tips; throat greyish white; back and sides of the neck and mantle rich rufous brown; feathers of the back, rump, and upper tail-coverts transversely rayed with chestnut-red and black, the former and the scapularies striped laterally with black and white; wings rufous, each feather spotted with white, which is bounded posteriorly with an irregular spot of black; primaries brown; chest and flanks olive, each feather having a triangular yellowish-white spot at the tip; centre of the abdomen and under tail-coverts yellowish white; bill brown, with a bluish tinge; irides bright reddish orange; legs and feet orange; claws white.

Sp. 480. TURNIX SCINTILLANS, *Gould*.

SPECKLED TURNIX.

Hemipodius scintillans, Gould in Proc. of Zool. Soc., part xiii. p. 62.

Hemipodius scintillans, Gould, *Birds of Australia*, fol., vol. v. pl. 83.

This very beautiful species is an inhabitant of the Houtman's Abrolhos, a group of islands lying off the western coast of Australia, and is tolerably abundant on two of them named East and West Wallaby Islands, where it is principally met with among the limestone crags.

In its general appearance and the style of its markings it

much resembles the *Turnix varius*, but on comparison will be found to be but little more than half the size of that species ; besides which, its colouring is much lighter, more varied, and sparkling, the white margins of the back-feathers are more numerous and conspicuous, and the markings of the throat and breast of a crescentic instead of an elongated form.

Nothing whatever is known of its habits and economy, but they doubtless closely resemble those of the other species of the genus.

The whole of the upper surface is light chestnut-red, each feather crossed by broad bars of brownish black, and margined with grey, within which are two narrow lines of black and white ; wing-coverts and tertiaries light chestnut-red, crossed by irregular zigzag bars of black, the interspaces of the outer margins greyish white ; chin and sides of the face white, with a narrow crescent-shaped mark of brown at the tip of each feather ; sides of the chest chestnut, each feather tipped with white, within which is an indistinct mark of deep black ; chest and under surface pale buffy white, the feathers of the chest with a row of dark grey spots on each margin, giving that part a speckled appearance ; primaries brown, narrowly edged with white ; irides reddish yellow ; bill greenish grey, darkest on the culmen, and becoming ashy grey beneath ; legs and feet orange-yellow.

Male.—Total length 5 inches ; bill $1\frac{1}{8}$; wing $3\frac{1}{4}$; tarsi $1\frac{1}{8}$.

Female. „ 6 „ $\frac{3}{4}$ „ $3\frac{1}{2}$ „ $\frac{3}{4}$.

Sp. 481. TURNIX MELANOTUS, *Gould*.

BLACK-BACKED TURNIX.

Hemipodius melanotus, Gould in Proc. of Zool. Soc., part v. p. 8.

Turnix melanotus, Gould in Grey's Trav. App., vol. ii. p. 419, note.

Hemipodius melanotus, Gould, Birds of Australia, fol., vol. v. pl. 84.

Several years have now elapsed since I described this species from a specimen received from Moreton Bay ; since

then I have obtained other examples from the eastern and northern parts of Australia; but have not obtained any information respecting its habits and economy.

The female is a larger bird than the male, in which respect only do the sexes differ in outward appearance.

Crown of the head black, each feather fringed with brown at the tip; space between the bill and the eye, stripe over the eye and cheeks, light yellowish brown, the feathers of the latter slightly tipped with black; back of the neck rich chestnut-red; scapularies deep chestnut-red, with a large transverse black mark in the centre of each feather, and a longitudinal stripe of fawn-yellow on their outer edges; rump and upper tail-coverts black, each feather freckled with fine markings of brown, with indistinct spots of buff on the external edges of the upper tail-coverts; greater and lesser wing-coverts buff-yellow, each feather having a spot of black in the centre; primaries brown; throat whitish; front of the neck and chest deep buff; sides of the neck and flanks light buff, with an oblong spot of black transversely disposed in the centre of each feather; centre of the abdomen and under tail-coverts buffy white; bill and feet brown.

Total length $6\frac{1}{2}$ inches; bill $\frac{7}{8}$; wing $3\frac{1}{4}$; tail $\frac{3}{4}$; tarsi $\frac{3}{4}$.

Sp. 482. TURNIX CASTANOTUS, *Gould*.

CHESTNUT-BACKED TURNIX.

Hemipodius castanotus, Gould in Proc. of Zool. Soc., part vii. p. 145.

Will-do-loom, Aborigines of Port Essington.

Thick-billed Quail, Colonists.

Hemipodius castanotus, Gould, Birds of Australia, fol., vol. v. pl. 85.

The Chestnut-backed Hemipode inhabits the northern and north-western portions of Australia; specimens from the latter have been forwarded to me by Mr. Bynoe and by Mr.

Dring of H.M.S. 'Beagle;' Gilbert also found it at Port Essington, and his notes respecting it I here transcribe:—

"This species inhabits the sides of stony hills in coveys of from fifteen to thirty in number; which, when disturbed, seldom rise together, but run along the ground, and it is only upon being very closely pursued that they will take wing, and then they merely fly to a short distance: while running on the ground their heads are thrown up as high as their necks will permit, and their bodies being carried very erect, a waddling motion is given to their gait, which is very ludicrous. The stomachs of those dissected were very muscular, and contained seeds and a large proportion of pebbles."

Head, neck, and chest olive-grey, the feathers of the head and neck spotted with fawn-white at the tip, and those of the chest having a spatulate mark of the same colour down the centre; centre of the abdomen and the under tail-coverts pale buff; a narrow stripe over each eye, back, shoulders, and tail rich chestnut; the feathers on the back and shoulders spotted with white, the white spots bounded anteriorly with black; primaries brown, edged with buff; irides gamboge-yellow; bill light ash-grey; naked skin round the eye smoke-grey; tarsi and feet king's-yellow.

Total length 7 inches; bill $\frac{7}{8}$; wing $3\frac{1}{2}$; tarsi 1.

Sp. 483.

TURNIX VELOX, *Gould*.

SWIFT-FLYING TURNIX.

Hemipodius velox, Gould in Proc. of Zool. Soc., part viii, p. 150.

Kar-a-dong, Aborigines of the mountain districts of Western Australia.

Little Quail of the Colonists.

Hemipodius velox, Gould, Birds of Australia, fol., vol. v. pl. 87.

I found this interesting species of *Turnix* abundant in various parts of New South Wales, and ascertained that it is strictly migratory, by finding it in those places in summer

which I had previously visited in winter, when no appearance of one was to be seen.

It appears to give preference to low stony ridges thinly covered with grasses, for it was in such situations that I generally found it, though on some occasions I started it from among the rank herbage clothing the alluvial soil of the bottoms. It lies so close as to be nearly trodden upon before it will rise, and when flushed flies off with such extreme rapidity, as, when its small size and the intervention of trees combine, to render it a most difficult shot to the sportsman. On rising it flies to the distance of one or two hundred yards within two or three feet of the surface, and then suddenly pitches to the ground. As might be expected, it lies well to a pointer, and it was by this means that I found many which I could not otherwise have started.

In addition to the districts above named, I observed it, although rarely, in the interior of the country north of the Liverpool Plains. Before I left Sydney a single specimen was sent me from South Australia, and in a collection from Swan River I found both the bird and its eggs; these circumstances proving that it possesses a range extending from one side of the continent to the other, and in all probability it inhabits a great portion of the interior. In Western Australia it is stated to frequent clear open spots of grass, and may occasionally be met with in the thick scrub, but its most favourite retreat is the grassy valleys of the interior adjacent to water.

Pleased as I was at making acquaintance with this little bird, I was still more gratified at finding its nest and eggs.

It breeds in September and October. The nest is slightly constructed of grasses placed in a shallow depression of the ground under the shelter of a small tuft of grass: the eggs are four in number, of a dirty white, very thickly blotched all over with markings of chestnut, eleven lines and a half long by nine lines broad: eggs from Western Australia are much

much lighter in colour, and have the chestnut blotchings more minute.

The stomach is extremely muscular, and the food consists of grasshoppers and other insects, seeds, &c.

One of the most singular circumstances connected with the history of this and the following species is the great difference in the size of the sexes, the males being but little more than half the size of the females.

Head, ear-coverts, and all the upper surface chestnut-red; the crown of the head in some specimens has a longitudinal mark of buff down the centre; the feathers of the back, rump, scapularies, and sides of the chest margined with buff, within which is a narrow line of black running in the same direction; the feathers of the lower part of the back are also crossed by several narrow irregular bands of black; primaries light brown, margined with buff on their internal edges; throat, chest, and flanks sandy buff, passing into white on the abdomen; bill horn-colour; irides straw-white; legs and feet yellowish white.

Total length $5\frac{1}{2}$ inches; bill $\frac{1}{2}$; wing 3; tarsi $\frac{3}{4}$.

The above is the description of a female: the male has the feathers on the sides of the chest conspicuously margined with buff.

Sp. 484. TURNIX PYRRHOTHORAX, *Gould*.

RED-CHESTED TURNIX.

Hemipodius pyrrhothorax, Gould in Proc. of Zool. Soc., part viii.
p. 150.

Hemipodius pyrrhothorax Gould, *Birds of Australia*, fol., vol. v.
pl. 86.

But little is known respecting the Swift-flying Turnix, and even less information has been obtained respecting the history of the present species, which, although assimilating to the former in some of its characters, differs from it in the markings of the face and neck, and in the rufous colouring of

the fore part of the throat and chest: it is also somewhat more slender and elegant in its proportions. It first came under my notice while traversing the flats near Aberdeen, on the Upper Hunter, where I obtained a single example of the female; since then, however, Mr. Coxen has kindly sent me examples of the opposite sex, and I have seen others in collections from the east coast.

The female has the crown of the head dark brown, with a line of buff down the centre; feathers surrounding the eye, ear-coverts and sides of the neck extremely small, white, edged with black; back and rump dark brown, transversely rayed with bars and freckles of black and buff; wings paler, edged with buff, within which is a line of black running in the same direction; primaries brown, margined with buff; throat, chest, flanks and under tail-coverts sandy red, passing into white on the centre of the abdomen; bill horn-colour; irides straw-yellow; feet yellowish white.

Total length $5\frac{1}{2}$ inches; bill $\frac{9}{18}$; wing 3; tarsi $\frac{3}{4}$.

The male has a similar character of markings on the upper surface, but the colouring of his throat and flanks is much paler, and he is fully a third smaller in size.

Genus PEDIONOMUS, *Gould*.

Allied to *Turnix*, but differing in having a small hind-toe. A single species only of this curious form has yet been discovered.

Sp. 485. PEDIONOMUS TORQUATUS, *Gould*.

COLLARED PLAIN-WANDERER.

Pedionomus torquatus, Gould in Proc. of Zool. Soc., part viii. p. 114.

— *microurus*, Gould in Proc. of Zool. Soc., part x. p. 20.

Turnix gouldiana, O. des Murs. (Bonaparte).

Pedionomus torquatus, Gould, Birds of Australia, fol., vol. v. pl. 80.

The structure of this singular little bird is admirably adapted

for inhabiting those extensive and arid plains which characterize the central portions of Australia; and we may reasonably suppose, that whenever the vast interior of that country shall be explored, other species of this form will be discovered.

The lengthened and courser-like legs of the Collared Plain-Wanderer are admirably suited for running, while its short, round and concave wings are as little adapted for extensive flight. Its general contour suggests the idea of a diminutive Bustard. As is the case with the *Turnices*, the sexes differ considerably both in size and markings, the female being by far the largest and richest in colour. On its native plains this bird has many singular habits, particularly that of secret-ing itself among the scanty herbage or of remaining quiet on the bare ground until it is nearly trodden upon before it will rise, and when it does take wing its flight is more contracted than that of any bird with which I am acquainted. In a state of captivity it becomes less shy and assumes, as the following notes by Sir George Grey will testify, many sprightly actions:—

“We have had several of these birds in confinement at different times; they eat pounded wheat, raw and boiled rice, bread and flies; the latter appear to be their favourite food. They soon become perfectly tame; the three now in our possession we have had for upwards of four months.

“These birds are migratory; they appear at Adelaide in June, and disappear about January; where they go has not yet been ascertained. They never fly if they can avoid so doing, and are often caught by dogs; when disturbed, they crouch down and endeavour to hide themselves in a tuft of grass. While running about they are in the habit of raising themselves in a nearly perpendicular position on the extremities of their toes, so that the hinder part of the foot does not touch the ground, and of taking a wide survey around them. The Emu sometimes stands in a similar position. I have not yet ascertained anything respecting their nests, eggs, or time of breeding. The call of those we have in confinement pre-

cisely resembles that of the Emu, not the whistle, but the hollow-sounding noise like that produced by tapping on a cask, which the Emu utters, but is of course much fainter."

Strange sent me a fully developed egg of this bird which he took from the ovarium of a female; in general character it resembles those of the *Turnices*; it is somewhat suddenly contracted at the smaller end, the ground-colour is stone-white sprinkled with small blotches of umber-brown and vinous grey, the latter colour appearing as if beneath the surface of the shell, the sprinkled markings predominating at the larger end; the length of the egg is one inch and one-eighth by seven-eighths in breadth.

The male has the crown of the head, back, and upper surface mottled with black, brown and fawn-colour, the latter occupying the external edge of the feathers, and the black and brown forming alternate circular markings on each feather; throat, neck, chest and flanks dull fawn-colour, the feathers of the neck and chest blotched with brown; flanks marked with the same colour, assuming the form of bars; tail-feathers almost invisible; centre of the abdomen and under tail-coverts buffy-white; irides straw-yellow; feet greenish yellow.

Total length $4\frac{1}{2}$ inches; bill $\frac{11}{16}$; wing $3\frac{1}{4}$; tarsi $\frac{7}{8}$.

The female has the crown of the head reddish brown, speckled with black; sides of the head and neck light buff, speckled with black; neck surrounded by a broad band of white, thickly spotted with black; all the upper surface reddish brown, each feather having several transverse crescent-shaped marks in the centre, and margined with buff; tail buff, crossed by numerous narrow brown bars; centre of the breast rufous, the remainder of the under surface buff; the feathers on the breast marked in a similar manner to those on the upper surface, and the flanks with large irregular spots of black; irides straw-yellow; bill yellow, passing into black at the point; feet greenish yellow.

Total length 7 inches; bill $\frac{3}{4}$; wing $3\frac{5}{8}$; tail $1\frac{3}{8}$; tarsi $\frac{7}{8}$.

Family PERDICIDÆ.**Genus COTURNIX, *Mæhring*.**

One true Quail is all that has yet been described in Australia ; this, as might be expected, is a denizen of the plains, and of all the open districts of any extent where grass-lands occur ; but it also resorts to the arable districts in great abundance. Another species occurs in New Zealand and others in India, Africa, and Europe, but not in America.

Sp. 486. COTURNIX PECTORALIS, *Gould*.**PECTORAL QUAIL.**

Coturnix pectoralis, Gould in Proc. of Zool. Soc., part v. p. 8.
Stubble Quail of the Colonists of Tasmania.

***Coturnix pectoralis*, Gould, *Birds of Australia*, fol., vol. v. pl. 88.**

The present species is very abundant in Tasmania, South Australia, and New South Wales ; I have also received specimens from Western Australia and a single example from the north coast, from both of which localities the specimens are smaller, and have a more buffy tint pervading the under surface ; I am not, however, prepared to affirm that they are specifically distinct. Open grassy plains, extensive grass flats, and the parts of the country under cultivation, are situations favourable to the habits of the bird ; in its economy and mode of life, in fact, it so closely resembles the Quail of Europe (*Coturnix communis*) that a description of one is equally descriptive of the other. Its powers of flight are considerable, and when flushed, it wings its way with arrow-like swiftness to a distant part of the plain ; it lies well to a pointer, and has from the first settlement of the colony always afforded considerable amusement to the sportsman. It is an excellent bird for the table, fully equalling in this respect its European

representative. During my rambles in the districts resorted to by this bird, I frequently found its nest and eggs; they bear a strong resemblance to those of our own Quail; but much variation exists in their colouring, some being largely blotched all over with brown on a straw-white ground, while from this to a finely spotted marking every variety occurs; the number of eggs in each nest varies from eleven to fourteen. The situations chosen for the nest are much diversified; sometimes it is placed among the thick grass of the luxuriant flats, while at others it is artfully concealed by a tuft of herbage on the open plains. The chief food of this species is grain, seeds and insects, the grain, as a matter of course, being only procured in cultivated districts; and hence the name of Stubble Quail has been given to it by the colonists of Tasmania, from the great numbers that visit the fields after the harvest is over.

September and the three following months constitute the breeding-season; but it is somewhat later in Tasmania than in South Australia and New South Wales.

The average weight of the male is four ounces and a half; the female, which rarely equals the male in size, may at all times be distinguished by the total absence of the black markings on the chest, and by the throat being white instead of buff.

The male has the lores, ear-coverts and throat buff; crown of the head and back of the neck deep brown; over each eye two parallel lines of yellowish white; a similar line down the centre of the head from the forehead to the nape; back of the neck brown, each feather marked down its centre with a lanceolate mark of yellowish white, blotched on each side with black; mantle, back and upper tail-coverts brown, transversely rayed with zigzag markings of black, and striped down the centre with lanceolate markings of yellowish white; wings brown, transversely rayed with zigzag lines of grey and black; primaries and centre of the chest black; sides of the chest

brown ; abdomen white, each feather marked down its centre with black ; flanks rich brown, the centre of each feather white, bounded on either side by a fine line of black ; bill black ; irides hazel ; feet pearly vinous white.

Total length $6\frac{3}{4}$ inches ; bill $\frac{1}{2}$; wing $3\frac{7}{8}$; tarsi $\frac{7}{8}$.

The female differs in being destitute of the black marks on the chest, in the throat being white instead of buff, and in the bill being olive instead of black.

Genus SYNOÏCUS, *Gould*.

The similarity in the habits and economy of these birds to those of the true Partridges, particularly of our well-known species the *Perdix cinerea*, allies them more nearly to that genus than to the true Quails (*Coturnix*).

The various species move about in small coveys, and when flushed fly but a short distance before they again alight. As an article of food they are all that can be wished.

Every part of Australia, from Port Essington to Tasmania, is inhabited by one or other member of the genus. The species are extremely difficult to distinguish from each other, and all of them may not yet have been described.

I may remark that these birds assume an infinite variety of markings ; but whether these markings are subject to any law I know not. It would be desirable to ascertain if the fully adult mated sexes are alike in colour, or if the female be darker or lighter than the male, and if those with strongly-marked bars of black on the upper surface be birds of the year.

The markings of the eggs of the various species differ as much as those of the plumage, some being of a uniform creamy-white, while others are thickly dotted all over with minute specks of brown.

Sp. 487. SYNOÏCUS AUSTRALIS.

SWAMP-QUAIL.

Perdix australis, Lath. Ind. Orn., Supp. p. lxii.

Coturnix australis, Temm. Pig. et Gall. 8vo, tom. iii. pp. 474 and 740.

New Holland Quail, Lath. Gen. Syn. Supp., vol. ii. p. 283.

Moo-réete, Aborigines of the lowland districts of Western Australia.

Brown Quail, Colonists of Swan River and Tasmania.

Synoicus australis, Gould, *Birds of Australia*, fol., vol. v. pl. 89.

Although this bird and its allies are ordinarily known in Australia under the trivial name of Quails (*Coturnix*), they are really more nearly allied to the Common Partridge (*Perdix cinerea*) of the British Islands, so renowned for the goodness of its flesh, and for the healthy pastime it annually affords to all who follow the sports of the field. Although much more diminutive in size, the Australian bird offers in many points of its economy a great similarity to its antipodean ally. The *Synoicus australis* is distributed over the whole of New South Wales, South Australia, and Tasmania, the localities most suited to its habits being thick grassy flats and humid spots overgrown with herbage, by the sides of rivers and water-holes. Its call is very similar to that of the Common Partridge, and like that bird it is found in coveys of from ten to eighteen in number, which simultaneously rise from the ground and pitch again within a hundred yards of the spot whence they rose. It sits so close, that it will often admit of being nearly trodden upon before it will rise. Pointers stand readily to it, and it offers perhaps better sport to the sportsman than any other bird inhabiting Australia. Its weight is about four ounces and three quarters, and its flesh is delicious.

The Swamp-Quail breeds on the ground, where it constructs a slight nest of grass and leaves; the eggs, which are of large size, and from ten to eighteen in number, are some-

times uniform bluish white, at others minutely freckled all over with buff.

Forehead, space between the bill and the eye, and the throat greyish white, with a tinge of buff; all the upper surface irregularly marked with beautiful transverse bars of grey, black and chestnut, each feather on the back having a fine stripe down the centre; shoulders greyish brown, the remainder of the wing marked with obscure transverse lines of grey, brown and black; primaries brown, mottled on the external edges with greyish brown; all the under surface buffy grey, each feather having numerous zigzag markings of black, and many of them having a very fine line of white down the centre; bill blue, deepening into black at the tip; irides orange; feet dull yellow.

Sp. 488. **SYNOÏCUS DIEMENENSIS**, *Gould*.

TASMANIAN SWAMP-QUAIL.

Synoïcus diemenensis, Gould in Proc. of Zool. Soc., part xv. p. 33.
Greater Brown Quail of the Colonists.

Synoïcus diemenensis, Gould, *Birds of Australia*, fol., vol. v. pl. 90.

The Tasmanian Swamp-Quail is fully a third larger than the *Synoïcus australis*, and has the markings of the upper surfaces more numerous and varied; the situations it affects appear to be low marshy grounds covered with dense masses of herbage. The eggs I procured were found in the swamps immediately below New Norfolk; they are more green than those of *S. australis*, are sprinkled all over with minute spots of brown, and are from twelve to eighteen in number, one inch and seven-sixteenths long by one inch and an eighth broad.

Forehead, lores and chin greyish white tinged with buff; crown of the head dark brown, with a line of buff down the centre; all the upper surface irregularly marked with beautiful transverse bars of grey, black and chestnut, each feather with a fine stripe of greyish white down the centre; primaries

brown, mottled on their external edges with greyish brown ; all the under surface greyish buff, each feather with numerous regular somewhat arrow-shaped marks of black, and many of them with a very fine line of white down the centre ; bill blue, deepening into black at the tip ; irides orange ; feet dull yellow.

Total length $8\frac{1}{2}$ inches ; bill $\frac{3}{4}$; wing $4\frac{1}{2}$; tarsi $1\frac{1}{8}$.

Sp. 489. **SYNOÏCUS SORDIDUS**, *Gould*.

SOMBRE SWAMP-QUAIL.

Synoïcus sordidus, Gould in Proc. of Zool. Soc., part xv. p. 33.

Synoïcus sordidus, Gould, *Birds of Australia*, fol., vol. v. pl. 91.

This species differs from its congeners in the absence of any variety in the markings of its plumage, in lieu of which all the feathers of the upper surface have a broad bluish-grey stripe down the middle.

Two specimens are all that have come under my notice ; both of which were received from South Australia.

Its habits doubtless resemble those of the other members of the genus, but nothing is at present known respecting them.

General plumage dark brown, minutely freckled with black, each feather of the upper and under surface with a broad stripe of bluish grey down the centre ; feathers of the head and back of the neck with a spot of blackish brown at the tip, those down the centre of the head and a few of the back-feathers with white shafts ; chin buff ; flank-feathers with an arrow-head-shaped mark of black near the tip.

Total length 7 inches ; bill $\frac{5}{8}$; wing $3\frac{3}{4}$; tarsi $\frac{7}{8}$.

Sp. 490. **SYNOÏCUS CERVINUS**, *Gould*.

NORTHERN SWAMP-QUAIL.

As I have before remarked, the Swamp-Quails of Australia

must either be regarded as constituting but one or several species—a point which must be left for future investigation, and which can only be determined by persons resident in the colony, or by a careful examination and comparison of a much larger number of examples than are at present to be found in this country. I have enumerated three species which appear to possess tangible specific characters, and I now venture to describe a bird commonly found in the neighbourhood of Port Essington, as distinct from those of the southern portions of the continent: it is one of the smallest members of the genus, and distinguished by a more delicate and sandy buff colouring.

The eggs of this species, like those of the other members of the genus, vary from ten to fourteen in number, and are usually deposited in a depression of the ground lined with a few grasses or other herbage. Some examples, received direct from Port Essington, are cream-white, without markings of any kind; their average length is one inch and a sixteenth, and their breadth seven-eighths of an inch.

Lores, sides of the head, and throat buff; all the upper surface marked with transverse bars of black, grey, and chestnut-brown, with a fine stripe of buffy white down the centre of each of the feathers of the back; shoulders greyish brown, remainder of the wing marked with obscure spots and freckles of brown and black; primaries brown, mottled externally with greyish brown; all the under surface buff, washed with grey, each feather with several zigzag transverse lines of black, and many with a fine line of white down the centre; bill blue, darkening into black at the tip; irides orange; feet dull yellow.

Total length of the male $6\frac{1}{2}$ inches; bill $\frac{9}{16}$; wing $3\frac{5}{8}$; tail $1\frac{1}{4}$; tarsi $\frac{7}{8}$.

Genus EXCALFATORIA, *Bonaparte*.

Three or four species of this well-defined genus inhabit India, China, the Indian Islands, and Australia; while others, equally typical, are found in Africa. They are among the most diminutive of the *Gallinaceæ*, if not the least of any of that extensive group of birds.

Sp. 491. EXCALFATORIA AUSTRALIS, *Gould*.

LEAST SWAMP-QUAIL.

Synoicus? *chinensis*, Gould, *Birds of Australia*, fol., vol. v. pl. 92.

In separating this species from the old *Perdix chinensis* of authors, I have no desire to add my own name to the end of a specific term; but I find there are several species of this form, and not one only, as was formerly supposed. The Australian bird is altogether smaller than the Indian specimens with which I have compared it, has a somewhat more delicate bill, shorter tarsi, a much darker upper surface, and the black blotches on the back much more conspicuous.

This is one of the species of Australian birds I have not personally seen in a state of nature, which is the more singular as I have received skins from nearly every locality. I have ascertained, however, that at some seasons it is very numerous in such low and humid districts as are clothed with dense and luxuriant grasses and other vegetable productions; but, beyond this, nothing is known of its history.

The male has the crown of the head and upper surface brown, irregularly blotched with black, some of the feathers with a narrow stripe of buff down the centre; wings brown, the coverts broadly margined with brown; sides of the head, breast, and flanks fine blue grey; throat black; within the

black on each side an oblong patch, and on its lower part a crescent-shaped mark of white; abdomen and under tail-coverts deep rich chestnut-red; irides hazel; bill black; feet yellow.

Total length $4\frac{1}{2}$ inches; bill $\frac{7}{18}$; wing $2\frac{5}{8}$; tarsi $\frac{3}{4}$.

The female has a broad stripe over each eye sandy buff; crown of the head and all the upper surface dark brown, crossed by fine bars of lighter brown, and each feather, particularly those of the back and rump, with a line of buff down the centre; throat and centre of the abdomen buff; breast, sides of the neck, flanks, and under tail-coverts sandy buff, crossed by numerous crescentic marks of blackish brown; irides dark brown; bill black; feet yellow.

Mr. Wallace sent to this country a new species of this form, so diminutive in size that I question if it be not the smallest gallinaceous bird yet discovered. A fine male of this species, bearing the name of *Excalfatoria minima*, Gould, now graces the national collection, and a second specimen is contained in my own.

Order GRALLATORES.

The birds comprised in this Order are very fairly represented in Australia. Among the forms peculiar to that country are the genera *Dromaius*, *Cladorhynchus*, *Tribonyx*, and *Eulabeornis*, while among those also found in other countries are *Casuarius*, *Otis*, *Ardea*, *Egretta*, *Ardeola*, *Lobivanellus*, *Strepsilas*, *Squatarola*, *Charadrius*, *Hæmatopus*, *Eudromias*, *Himantopus*, *Schæniclus*, *Terekia*, *Gallinago*, *Recurvirostra*, *Limosa*, *Rhynchæa*, *Numenius*, *Mycteria*, *Parra*, *Rallus*, and *Porzana*.

I have not failed to remark that wherever similar physical conditions exist similar forms of birds generally occur: thus the marshes of Australia have the usual accompaniment of Herons, Rails, and Snipes; the plains their Bustard, and the strands of the sea-shore their Sandpipers and Plovers. Still there are some remarkable exceptions to this rule in Australia: for she has no *Pterocles* among her Rasorial Birds, or *Cursorius* among her Grallatores, for both of which forms the country would seem to be well adapted; neither has she a *Phænicopterus*, like Africa.

Family STRUTHIONIDÆ.

Time was when many parts of our globe were inhabited by enormous birds of this family, evidence of which is afforded by their semi-fossilized remains found in Madagascar, New Zealand, and elsewhere. These great Struthiones have still their representatives; for America has two, if not three, species of *Rhea*; Africa, its Ostrich; New Guinea and the neighbouring islands, their Cassowaries; Australia, its Emus; and the islands of New Zealand, two or three species of diminutive *Apteryges*.

Genus DROMAIUS, Vieillot.

At least two species of this form inhabit Australia, to which country and Tasmania they are restricted. Structurally they differ from the Ostrich in having three toes instead of two, and from the Rheas and Cassowaries in other particulars. The sexes are alike in colouring, and the male takes upon himself the task of incubating the eggs.

Sp. 492. DROMAIUS NOVÆ-HOLLANDIÆ.

EMU.

New Holland Cassowary, Phill. Bot. Bay, pl. in p. 271.

Southern Cassowary, Shaw, Nat. Misc., pl. 99.

Emu of New South Wales, Collin's Voy., vol. ii. pl. in p. 307.

Casuarius novæ-hollandiæ, Lath. Ind. Orn., vol. ii. p. 665.

Casoare de la Nouvelle Hollande, Péron, Voy. aux Terr. Aust., tom. i. p. 467, pls. 36 and 41.

Dromaius ater, Vieill. Gal. des Ois., tom. ii. pl. 226.

The Emeu, Benn. Gard. and Menag. of Zool. Soc., Birds, p. 192.

Van Diemen's Land Cassowary, Lath. Gen. Hist., vol. viii. p. 384, pl. cxxxviii.

Dromiceus australis, Swains. Class. of Birds, vol. ii. p. 346.

— *emu*, Steph. Cont. of Shaw's Gen. Zool., vol. xi. p. 439, and vol. xiv. p. 307, pl. 39.

Dromaius novæ-hollandiæ, G. R. Gray, List of Gen. of Birds, 2nd edit. p. 82.

Dromaius novæ-hollandiæ, Gould, Birds of Australia, fol., vol. vi. pl. 1.

This well-known bird was first described and figured under the name of the New Holland Cassowary in Governor Phillip's 'Voyage to Botany Bay,' published in 1789, and it has been included in all ornithological works of a general nature that have appeared since that date; but by far the most accurate account of it is that given by the late Mr. Bennett in the 'Gardens and Menagerie of the Zoological

Society delineated.' " In size and bulk the Emu is exceeded by the African Ostrich alone. Its average measurement may be estimated at between five and six feet in height. In form it closely resembles the Ostrich, but is lower on the legs, shorter in the neck, and of a more thick-set and clumsy make. At a distance its feathers have more the appearance of hair than of plumage, their barbs being all loose and separate. As in the Ostriches, they take their origin by pairs from the same shaft. The wings are so extremely small as to be quite invisible when applied to the surface of the body. They are clothed with feathers exactly similar to those of the back, which divide from a middle line and fall gracefully over on either side."

Its flesh has been compared to coarse beef, which it resembles, according to Mr. Cunningham, " both in appearance and taste, and is good and sweet eating ; nothing indeed can be more delicate than the flesh of the young ones. There is but little fit for culinary use upon any part of the Emu, except the hind-quarters, which are of such dimensions that the shouldering of two hind-legs homewards for a mile distance once proved to me as tiresome a task as I ever recollect to have encountered in the colony." I may remark that its flesh proved of the greatest service to Dr. Leichhardt and his intrepid companions during their overland route from Moreton Bay to Port Essington, in the course of which, but more particularly between the head of the Gulf of Carpentaria and Port Essington, the sight and capture of the Emu was almost a daily occurrence ; so abundant in fact was it, that he states he saw in the short space of eight miles at least a hundred, in flocks of three, five, ten, and even more, at a time. Dr. Leichhardt mentions that the natives on killing an Emu invariably break the wings—why, he was at a loss to conceive, as they could but slightly assist the animal in making its escape, should it survive ; some curious practices also exist with respect to this bird among the natives, the particulars of

which I have not been able to learn, but I may mention that the young men and boys are not allowed to feed upon it.

The range of the present species is still unknown ; but in all probability it extends from Tasmania through the whole of the eastern division of Australia to its most northern limits. And now a word to the Australians, particularly to those who are interesting themselves about acclimatizing animals from other countries—wishing for things they have not and neglecting those they possess. At what cross purposes are we playing both in Europe and Australia!—in England a price is put upon the head of the Sparrow, while in Australia rewards are offered for its introduction ; but on this subject any remarks would be out of place here, and I must content myself by praying that protection may be afforded to that noble bird, the Emu, in order that it may not be extirpated from the continent, as it nearly has been from Tasmania, where, I hear, it would require a month's search, in the most remote parts of the island, before one could see any of the few that are still living thereon. How much will the loss of this fine bird be regretted by every right-minded person who claims Tasmania as his father-land !

On the continent of Australia the Emu was formerly abundant about Botany Bay and Port Jackson Harbour, but is now only to be seen on the plains of the interior, over whose solitudes it still roams in great numbers, and where it breeds, depending upon the strength and swiftness of its legs to avoid the pursuit of the stockmen and their dogs. Further and further back, however, will it be driven until it be extirpated, unless some law be instituted to check its wanton destruction. That it might easily be preserved is evident from the readiness with which it breeds in confinement ; and surely I have here said sufficient to induce the Australian authorities to give a thought to its protection, as well as that of the great red and grey Kangaroos and other interesting native birds and quadrupeds.

The note of the Emu is a low booming or pumping noise, which we know is produced in the female by means of the expansion and contraction of a large membranous bag, surrounding an oblong opening through the rings of the trachea; but whether this peculiarity of structure is also to be found in the male I am not aware.

They pair with tolerable constancy, and the male bird appears to take a large share in the task of incubation.

The eggs, which are merely placed in a cavity scooped in the earth, generally in a sandy soil, are six or seven in number, of a beautiful dark green, resembling shagreen in appearance; five inches and three-quarters in length by three inches and three-quarters in breadth. They are held in much esteem by the natives, who feed upon them whenever they can be procured.

Little or no difference of colour is observable in the sexes; but I believe the female is always smaller than the male.

The entire plumage is of a dull brown, mottled, particularly on the under surface, with dirty grey; the feathers of the head and neck becoming gradually shorter, and so thinly placed that the purplish hue of the skin of the throat and round the ears is perfectly visible; irides brown; bill and legs dusky black.

The young on first quitting the shell have a very elegant appearance, the ground-colour being greyish white, with two longitudinal broad black stripes along the back, and two others on each side, each subdivided by a narrow middle line of white; these stripes being continued along the neck without subdivision and broken into irregular spots on the head; two other broken stripes pass down the fore-part of the neck and breast and terminate in a broad band across the thighs.

Sp. 493. DROMAIUS IRRORATUS, *Bartlett*.

SPOTTED EMU.

Dromæus irroratus, Bartl. in Proc. of Zool. Soc., part xxvii. p. 205.

At the scientific meeting of the Zoological Society of London, held on the 24th of May, 1859, Mr. Bartlett, Superintendent of the Society's Gardens in the Regent's Park, exhibited a specimen of an Emu which had been obtained with several others in the interior of South Australia, and remarked that—

“It differs from *Dromæus novæ-hollandiæ* in having the whole of the feathers of the body distinctly marked with narrow transverse bars of light grey and dark brownish black. The feathers of the back and sides are broader, longer, and less silky in texture than those of the common species, the latter difference being quite evident to the touch; the upper part of the head and neck is nearly black, and the feathers appear thicker than those of the same parts in the other bird.

“The specimen to which these remarks refer was one of three examined by me, two of which were adult and one a young bird about one-third grown. The latter exhibited the transverse bars on its plumage as distinctly as the adult bird, and the broad longitudinal stripes were clearly to be seen. Judging from the skins I have seen, I am inclined to consider that this new bird is smaller than the common species. I beg to propose provisionally the name of *Dromæus irroratus* for this supposed new species.”

Having seen adult and youthful examples of this Emu, all bearing the characters which suggested its specific name, I have no doubt of its being distinct from the *D. novæ hollandiæ*. I am almost equally certain that it is confined to the western division of Australia, and that it represents there the Emu of the eastern. Whether the two species inosculate in South

Australia, and if the present bird extends its range to the north and north-western coast, future research must determine.

In some remarks on the *Struthionidæ* read at the scientific meeting of the Society, on the 24th of April, 1860, Dr. Sclater, referring to this new Emu, says, "I have lately had the pleasure of examining two specimens in Holland. One of these, now in the Gardens of the Zoological Society of Amsterdam, was brought from Albany in Western Australia, and thus renders it probable that the Spotted Emu is the Western representative of the *D. novæ-hollandiæ*. The second, now in the Zoological Gardens at Rotterdam, I have obtained by exchange for this Society. The Emu of Western Australia may, as was pointed out by Mr. Bartlett when he first described it, be easily distinguished from the well-known Eastern bird by its spotted plumage. On comparing the feathers of the two species together, the mode in which this spotting is produced is clearly apparent. The feathers of *D. irroratus* are barred alternately with silky white and darkish grey throughout their length, terminating in a black tip margined posteriorly with rufous. Those of *D. novæ-hollandiæ* are uniform blackish grey from the base to the extremity, which is black with a black terminal band of rufous. On comparing the two living birds we find *D. irroratus* generally of a much more slender habit. The tarsi are longer and thinner, the toes longer and much more slender, and the tarsal scutes smaller. The irides are pale hazel, instead of reddish brown, as in *D. novæ-hollandiæ*. As Mr. Bartlett's original skin of *D. irroratus* was obtained in the interior of Southern Australia, the range of this Emu may be supposed to extend over the western portion of Australia into the latter colony, where it probably inosculates with *D. novæ-hollandiæ*. Two additional specimens of the Spotted Emu (both immature) have been lately received by the Society from Swan River. In this state of plumage the bird is decidedly darker than its near ally, *D. novæ-hollandiæ*."

Genus CASUARIUS, *Linnaeus*.

New Guinea and the adjacent islands are the countries in which the birds of this form principally exist ; and it is more than probable that one species is found in Australia. They appear to be the remnant of a great group of Struthious birds closely allied to the Ostriches and Emus, and perhaps still more intimately to the extinct *Dinornithes*, the remains of which are almost daily being exhumed from the morasses of New Zealand.

Sp. 494. CASUARIUS AUSTRALIS, *Wall*.

AUSTRALIAN CASSOWARY.

Casuarius australis, Wall, Illustrated Sydney Herald, June 3, 1854 ; Gould in Proc. of Zool. Soc., part xxv. p. 270.

Although no specimen of this bird has been brought before the scientific world, we cannot, I think, doubt that a species of this form does really exist in the northern part of Australia ; but whether it be identical with some previously described species inhabiting New Guinea and the neighbouring islands, or entirely new, must remain for the present an open question. All that we at present know on the subject is comprised in the following extract from the ' Illustrated Sydney Herald,' above quoted :—" A specimen of this bird was procured by the late Mr. Thomas Wall, naturalist to the expedition commanded by Mr. Kennedy. It was shot near Cape York, in one of those almost inaccessible gullies which abound in that part of the Australian continent. This Cassowary, when erect, stands about five feet high ; the head is without feathers, but covered with a blue skin, and, like the Emu, is almost without wings, having mere rudiments ; the body is thickly covered with dark brown wiry feathers ; on the head is a large prominence or helmet of a bright red colour, and to the neck are attached, like bells, six or eight round fleshy balls of bright

blue and scarlet, which give the bird a very beautiful appearance. The first and indeed the only specimen obtained of the Australian Cassowary was unfortunately left at Weymouth Bay, and has not been recovered. Mr. Wall, being most anxious for its preservation, had secured it in a canvas bag and carried it with him to the spot where, unfortunately for science, it was lost. In the ravine where the bird was killed, as well as other deep and stony valleys of that neighbourhood, it was seen running in companies of seven or eight. On that part of the north-eastern coast, therefore, it is probably plentiful, and will be met with in all the deep gullies at the base of high hills. The flesh was eaten, and found to be delicious ; a single leg afforded more substantial food than ten or twelve hungry men could dispose of at a single meal. The bird possesses great strength in its legs, and makes use of it in the same manner as the Emu. Its whole build is more strong and heavy than the latter bird. It is very wary, but its presence may be easily detected by its utterance of a peculiarly loud note, which is taken up and echoed along the gullies ; and it could be easily killed with a rifle."

The above account was furnished by Mr. Thomas Wall's brother, Mr. William Sheridan Wall, Curator of the Australian Museum.

Family OTIDIDÆ.

A country better adapted than Australia for the members of this family can scarcely be imagined ; yet, singularly enough, only one species has yet been found there. Africa is the country where the species are most numerous.

Genus CHORIOTIS, *Bonaparte*.

The *Choriotis edwardsi*, of the plains of Upper India, and the *C. australis* are beautiful representatives of each other in their respective countries.

Sp. 495. CHORIENTIS AUSTRALIS.

AUSTRALIAN BUSTARD.

Otis australis, Gray in Griff. Anim. King., vol. iii. p. 305.

—— *australasianus*, Gould in Proc. of Zool. Soc., part viii. p. 176.

Chorientis australis, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii.

Be-bil'-ya, Aborigines of Western Australia.

Turkey, Colonists of New South Wales.

Native Turkey, Colonists of Swan River.

***Otis australasianus*, Gould, Birds of Australia, fol., vol. vi. pl. 4.**

In size this species exceeds the European Bustard (*Otis tarda*), standing higher upon its legs, and having a longer neck; and, when seen at freedom slowly stalking over its native plains, no Australian bird, except the Emu, is so majestic, or assumes in its carriage so great an air of independence. The male, whose weight is from thirteen to sixteen pounds, considerably exceeds the female in size, and, from the greater length of the plumes of the neck and occiput, is much more stately in appearance.

I am of opinion that it is merely a summer visitant to all the southern parts of Australia, but to determine this point requires a longer residence than the nature of my visit permitted. I frequently encountered and killed it both on the plains of the Lower Namoi and also in South Australia, and Gilbert met with it in Western Australia, Leichardt within the region of the tropics, and Sturt around the Dépôt in the desert; its range over the country, therefore, is probably universal. Within the precincts of the colony of New South Wales, as might be expected, a bird of so large a size is much persecuted, and has consequently become very shy. I met with it upon several occasions on the downs near Scone, the flats in the neighbourhood of Aberdeen, and other similar situations in the Upper Hunter district. It flies heavily, with its long neck stretched out to the utmost; but it is capable of sustaining flight for a considerable distance.

As an article of food its flesh is delicate and well-flavoured, and in every respect equals that of its well-known prototype of Europe.

Its food consists of seeds, vegetables, grasses, lizards, mollusks, insects, &c.

It breeds in the latter part of September; the situation chosen for the purpose being a clear spot in a valley, or on the side of a grassy hill: the eggs are usually deposited on the bare ground; occasionally, however, a few grasses are spread for them to lie upon. They are two in number, three inches long by two inches and two lines broad, and are of an olive-colour, stained with longitudinal dashes of brown.

Crown of the head and occiput black; sides of the head, the neck, and breast greyish white, each feather crossed by numerous fine zigzag bands of brown, giving those parts a freckled appearance; wing-coverts black, largely tipped with white; all the upper surface, wings, and upper tail-coverts brown, very minutely freckled with reddish brown; some of the feathers towards the hinder parts of the body tinged with grey; tail grey, crossed near the centre by an interrupted band of white, minutely freckled with white, margined with brown, and slightly tipped with white; chest crossed by an irregular band of black, beyond which the under surface is white; under tail-coverts greyish black, tipped with white; irides greenish white; eyelash pale olive-yellow; bill straw-white, with olive and black culmen; legs and feet straw-yellow.

Total length 40 inches; bill 4; wing 25; tail 10; tarsi $7\frac{1}{2}$.

Family CHARADRIADÆ.

I should suppose that there is no country on the entire face of the globe, except, perhaps, the antarctic land, that is not inhabited by some species of this family. From Arctic America, through the course of the Andes, to Cape Horn species occur; while from Siberia, through India and its islands, to the southern portions of Tasmania they are also found, and also in Polynesia and New Zealand. Australia is tolerably furnished with members of this group, since she has many genera and species, ranging from the great *Ædicnemi* to the little *Hiaticulæ* inclusive.

Genus ÆDICNEMUS, *Temminck*.

Species of this form are very generally dispersed over Africa, India, and Europe; in Australia there are one or two, and, I believe, the same number is found in South America.

These birds are allied on the one hand to the Bustards, and on the other to the Plovers; a more complete union of the characters of both could not, indeed, be found; but, perhaps, they are most nearly allied to the latter.

Sp. 496. ÆDICNEMUS GRALLARIUS.

SOUTHERN STONE-PLOVER.

Charadrius grallarius, Lath. Ind. Orn., Supp. p. lxvi.

—— *frenatus*, Lath. Ib., p. lxvii.

High-legged Plover, Lath. Gen. Syn. Supp., vol. ii. p. 319.

Ædicnemus longipes, Geoff. in Mus. Paris.

Bridled Plover, Lath. Gen. Syn. Supp., tom. ii. p. 320.

Ædicnemus grallarius, List of Birds in Brit. Mus. Coll., part iii. p. 59.

Charadrius longipes, Wagl. Syst. Avium, *Charadrius*, sp. 4.

Burhinus grallarius, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii.

Wee-lo, Aborigines of Western Australia.

Ædicnemus grallarius, Gould, Birds of Australia, fol., vol. vi. pl. 5.

This is the largest species of its genus yet discovered, its

body being nearly the size of that of a hen Pheasant, and it has also longer legs than any of the others. I have seen specimens from Swan River, South Australia, and New South Wales, in all of which countries it is equally common, wherever districts occur suitable to its habits and mode of life. Sandy plains, the crowns and sides of grassy hills, and flats between the mountain ridges, particularly those that are of a rough and stony character, are the situations it usually frequents, and where it is mostly met with in pairs, but is occasionally seen in small companies of from eight to ten or more in number; it is at all times a shy bird, and it requires some degree of stratagem to approach it within gunshot. It runs with great facility, and when not disposed to take wing squats on the ground by the side of a stone or a prostrate log of wood, and there remains so close as almost to admit of being trodden upon before it will rise. Upon an intruder approaching the vicinity of its young, it employs many enticing actions to attract his notice to itself, and if possible lead him away from the spot; at one moment assuming lameness to such an extent as to appear incapable of walking, at other times hanging down its wings as if escape by flight was impossible, yet withal is so wary that I never knew one captured by the hand, or obtained by any other means than by shooting it. While walking about the plains, it is a stately and imposing bird; and, when on the wing, it mounts high in the air with a quick, rather laboured motion of the wings, does not fly to any great distance, but usually pitches again in some clear place among the trees, and seeks safety by running off and secreting itself among the bushes or squatting on the ground. On the approach of evening and during the early part of the night, its loud, harsh, and peculiar cry, resembling the words *wee-lo* two or three times repeated, is often heard. It chiefly feeds at night upon insects of various kinds and berries.

The eggs are invariably two in number, and are deposited

on the bare ground during September and the four following months. They vary considerably in colour, as well as in the form of their markings; their usual ground-colour is pale buff, thickly blotched all over with umber-brown; they are about two inches and a quarter long by one inch and five-eighths broad.

The markings and general appearance of the two sexes are so similar, that it is scarcely possible to distinguish the male from the female without the aid of dissection.

Crown of the head, back of the neck, and back grey, each feather with a line of brownish black down the centre; space surrounding the eye white, bounded in front and below with a narrow streak, which, as well as the ear-coverts and a broad stripe down each side of the neck, is dark brown; lores and chin white; scapularies blackish brown, margined at the base with grey; the upper rows of wing-coverts brown, the lower ones white, tipped with brown, all with a broad stripe of black down the centre; primaries brownish black, crossed towards the extremities by a broad irregular band of white; tertiaries light brown, with a dark stripe down the centre, and margined with white; tail brown, crossed by several bands of white and dark brown, and largely tipped with black; breast and abdomen buffy white, with a broad stripe of brownish black down the centre of each feather; lower part of the abdomen white; bill black; irides yellow; eyelash black; legs sickly yellowish olive, gradually passing into the brown of the feet.

It has for a long time appeared to me that a second species of this form exists on the northern coast, since I have received specimens from thence which have longer tarsi and shorter wings. If this be the case, the species is undescribed; but if these birds be identical with the present, then the range is greater than I have stated.

Genus **ESACUS**, *Lesson*.

Of this genus two species are known, one of which inhabits India, the other Australia. The form is nearly allied to *Ædicnemus*; still the members of these genera perform different offices, and inhabit different situations. The bill of *Esacus* is admirably adapted for gathering Crustaceans on the oozy mud-banks and flat sea-shores, while that of *Ædicnemus* is fitted for seizing the slugs, worms and insects which it finds on sterile grassy hills.

Sp. 497. **ESACUS MAGNIROSTRIS.**

LARGE-BILLED SHORE PLOVER.

Ædicnemus magnirostris, Geoff.—Temm. Pl. Col. 387.

Burhinus magnirostris, Ill. Prod. Syst. Mamm. et Av., p. 250.

Esacus magnirostris, G. R. Gray, List of Gen. of Birds, 2nd edit. p. 83.

Weë-lo, Aborigines of Port Essington.

***Esacus magnirostris*, Gould, Birds of Australia, fol., vol. vi. pl. 6.**

This fine species is tolerably abundant along the northern and north-western parts of Australia, where it gives a preference to the low flat shores of the sea, and feeds on crabs, marine insects, worms and various kinds of mollusks. At night it is said to utter a loud scream or cry, resembling the word *weë-lo*, whence its aboriginal name: it is somewhat singular that the same name is applied to the *Ædicnemus grallarius* by the natives of Western Australia, where the present bird has not as yet been seen; the cry of the two birds being similar is doubtless the cause of their both being known to the natives of those distant parts of the country by the same appellation, as it is not unusual for them to name birds after the sound they utter.

The sexes bear a general resemblance to each other, and the young of the first autumn is only distinguished by its feathers being margined with grey.

I was favoured with an egg of this fine bird by the late Commander J. M. R. Ince, R.N., who obtained it at Port Essington. Its ground-colour was cream-white, streaked and marked all over with dark olive-brown, some of the markings being large and bold without assuming any regular form, and others mere blotches about an eighth of an inch in diameter ; while many of the streaks were as fine as a hair, and were of a crooked or zigzag form : it was two inches and a half long by one inch and three-quarters broad ; judging from analogy, I may venture to assert that two are laid at a time.

Above and below the eye a broad mark of white, which is continued down the side of the head, the eye and the white marks being surrounded by a large patch of dark blackish brown ; at the angle of the lower mandible is a small patch of blackish brown ; throat and sides of the face dull white ; head and all the upper surface light brown, the feathers of the head and neck with a narrow line of dark brown down the centre ; lesser wing-coverts dark brown, the last row crossed with white near the tip, forming a line along the wing ; remainder of the coverts grey, deepening into brown on the tertiaries ; first three primaries dark brown at the base and tip, and white in the centre, the remainder white stained with brown near the tip ; tail grey, crossed with white near the tip, which is dark brown ; fore-part of the neck like the head, but paler ; breast brownish grey ; abdomen and under tail-coverts buffy white ; irides pale yellow ; eyelids primrose-yellow ; base of the bill sulphur-yellow, which colour is continued along the sides of the upper mandible above the nostrils ; remainder of the bill black ; tibiæ lemon-yellow ; tarsi and feet wine-yellow ; the upper ridge of the scales of the toes lead-colour.

Genus HÆMATOPUS, *Linnaeus*.

I believe there is no country in the world of any extent the shores of which are not inhabited by one or other of the numerous species of this genus ; but it would seem that all those which exist in the southern hemisphere are totally different from those of the northern. Two species inhabit Australia.

These birds inhabit the sea-shores, particularly those that are rocky, and where every receding tide leaves masses of kelp and corallines, among which they obtain mollusks and other marine animals. During the breeding-season they sometimes ascend rivers and deposit their two eggs on the shingle above high-water mark. Some of the species are subject to a slight seasonal change of plumage, particularly in the colour of the throat. The sexes are alike in external appearance.

Sp. 498. HÆMATOPUS LONGIROSTRIS, *Vieillot*.

WHITE-BREASTED OYSTER-CATCHER.

Hæmatopus longirostris, Vieill., 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. xv. p. 410.

—— *picatus*, Vig. App. to King's Voy. to Australia.

—— *australasianus*, Gould in Proc. of Zool. Soc., part v. p. 155.

Hæmatopus longirostris, Gould, *Birds of Australia*, fol., vol. vi. pl. 7.

This species is so generally dispersed over the southern coast of Australia, that to particularize localities where it may be found would be superfluous, but I may state that it is more abundant in Tasmania and the islands in Bass's Straits than elsewhere. As is the case with the European species, low muddy flats under the influence of the tide, sandy bays on the sea-shore, estuaries, the mouths of rivers and marshes are its natural places of resort. During the greater part of the year it may be observed in small companies of from three to ten or

more in number, associating with *Hæmatopus fuliginosus* and other shore birds, such as Curlews, Whimbrels, Stints, Sandpipers, &c., that seek their food on beaches and sand-banks, whereon each receding tide leaves numerous mollusks and other marine animals, which afford a plentiful repast to myriads of birds of the order of which the present species forms a part. In its appearance it is very handsome and attractive, the white feathers of the wings and breast showing very conspicuously as it nimbly trips over the sands. During the breeding-season, which lasts from September to January, it leaves the shores and resorts to small islands and rocky promontories for the purpose of rearing its young. The eggs, which are two or three in number, are usually deposited on the bare ground near the water's edge; they are of a buffy stone-colour, marked all over with large irregular blotches of dark chestnut-brown, approaching to black; two inches and a quarter long by one inch five-eighths broad. The young are soon capable of running, and in case of danger secrete themselves behind a stone or in a crevice of the rocks, while the adults keep flying backwards and forwards, uttering their loud and clamorous cries with the view of decoying away the intruder—a stratagem often resorted to by other birds.

The sexes present no external difference whatever. The young, from the time they are half-grown until they have arrived at maturity, have the same kind of plumage, but differ from the adults in having each black feather of the back and wings strongly edged with brown, forming circular marks and bars on nearly the whole of the upper surface.

Head, neck, breast, back, wings and tail-feathers for three parts of their length from the tip, deep greenish black; the tips of the wing-coverts, abdomen, rump, upper and under tail-coverts, and the bases of the tail-feathers pure white; irides crimson; bill and eyelash deep orange-scarlet; feet light brick-red.

Sp. 499. **HÆMATOPUS FULIGINOSUS**, *Gould*.**SOOTY OYSTER-CATCHER.***Mur-roo-wa-dā-ree*, Aborigines of Port Essington.*Black Red-bill*, Colonists of Western Australia.*Black Oyster-catcher*, Colonists of New South Wales, Tasmania, and Port Essington.

Hæmatopus fuliginosus, Gould, *Birds of Australia*, fol., vol. vi. pl. 8.

After a careful examination and comparison of the Black Oyster-catchers of the Cape of Good Hope, Cape Horn, and Australia, I find them to differ so much from each other, that I can come to no other conclusion than that they are so many distinct species, and hence I have been induced to characterize the Australian bird under the appellation of *H. fuliginosus*, from the sooty colour of its plumage.

Tasmania, the islands in Bass's Straits, and the southern coast of the Australian continent generally are the principal resorts of this species. Like its near ally, it is equally abundant wherever situations occur suited to its habits and economy, low sandy beaches at the mouths of rivers, spits of land running into the sea and small islands being its favourite places of abode; and so universally is it dispersed, that, as I have stated with regard to the *H. longirostris*, it is quite unnecessary to point out particular localities where it may be found; in fact, every small island and every mile of the coasts of the countries I have mentioned are more or less visited by it. It is a strictly stationary species, breeding in the places of its usual resort; or if any change in this respect takes place, it is that, for the sake of safety and freedom from intrusion, the bird leaves the main shore and betakes itself to small rocky islands, such as those in Bass's Straits, where, exempt from annoyance of every kind, it may rear its brood in safety.

The present species is a stout-built and powerful bird,

but from the sombre colouring of its plumage it is not so conspicuous and attractive as the White-breasted Oyster-catcher.

Its eggs are two in number, two inches and three quarters long by one and three-quarters broad, of a light stone-colour, blotched all over with large irregular markings of dark brown, some of which appear as if beneath the surface and of a purplish hue.

It becomes exceedingly clamorous if its nest be intruded upon, frequently uttering a loud shrill call while flying backwards and forwards near its breeding-place.

The entire plumage of a uniform sooty black, slightly glossed on the neck and under surface with green; bill and eyelash extremely rich orange-yellow; irides red; legs and feet dull brick-red.

Total length 15 inches; bill 3; wing $9\frac{1}{2}$; tail 4; tarsi $2\frac{1}{4}$.

Genus LOBIVANELLUS, *Strickland*.

Two species of this beautiful form inhabit Australia, one the northern and the other the southern parts of the country; I believe they are both confined to this portion of the globe. Other species are found in India and Africa.

Sp. 500. LOBIVANELLUS LOBATUS.

WATTLED PLOVER.

Tringa lobata, Lath. Ind. Orn., Supp. p. lxxv.

Wattled Sandpiper, Lath. Gen. Syn. Supp., vol. ii. p. 313.

Vanellus lobatus, Vieill. Ency. Méth. Orn., part iii. p. 1075.

Charadrius lobatus, Wagl. Syst. Av., sp. 51.

Vanellus novæ-hollandiæ, Steph. Cont. of Shaw's Gen. Zool., vol. xi. p. 516.

— *gallinaceus*, Jard. and Selby, Ill. Orn., vol. iii. pl. 84.

Kalloo-nagh, Aborigines of New South Wales.

Alarm-bird of the Colonists.

Lobivanellus lobatus, Gould, Birds of Australia, fol., vol. vi. pl. 9.

This species is common in most parts of New South Wales,

and on some of the islands in Bass's Straits, particularly on Green Island, where it was breeding at the period of my visit in January 1839. I did not observe it in Tasmania, but it is not improbable that it will hereafter be found to be an inhabitant of that country as well as of those above mentioned. It has not yet been seen in Western Australia, neither have I heard of its occurrence on the northern coast of the continent. It is an attractive and showy bird, and when unmolested approaches sufficiently close to the dwellings of the settlers to permit its actions and manners to be minutely observed. Among other places where I noticed this species, I may mention that I saw it in flocks on the edge of the small ponds immediately adjoining the house of C. Throsby, Esq., at Bong Bong, on the fine estate of James Macarthur, Esq., at Camden, and at Yarrundi on the Upper Hunter. Open flats and high dry grounds appeared to be equally suitable to its existence; for nothing could be more sterile and parched than the islands in Bass's Straits, when compared with the humid flats of the Upper Hunter, covered as they are with grasses and rank vegetation; yet in both these situations I observed it at nearly the same season of the year. Its food consists of insects and worms. While on the ground it has much of the carriage of the common European Pewit (*Vanellus cristatus*), but a decided difference is observable in its mode of running, and in its bold and attractive manners. The more lengthened form of its wings also induces a considerable difference in its flight, which has less of the flapping laboured action so conspicuous in that of the Pewit.

In some parts of New South Wales this ornamental bird has obtained the name of the Alarm-bird from its rising in the air, flying round and screaming at the approach of an intruder, causing not only all of its own species to follow its example, but every other animal in the district to be on the alert. This fact I had ample opportunities of verifying on the islands in Bass's Straits, where I had scarcely

stepped from the boat before every creature was made acquainted with my presence—no small annoyance to me, whose object was to secure the wary cereopsis and eagle, which with thousands of petrels and many other kinds of water-birds tenant these dreary islands.

The sexes are scarcely to be distinguished from each other, either in size or plumage; both possess the spur on the shoulder, but it is much more developed in the male than in the female; the beautiful primrose-coloured wattle, with which the colouring of the bill and the bold eye closely assimilate, the pinky vermilion hue of its legs, and the strongly contrasted colours of its plumage, render it one of the most beautiful of the Plovers yet discovered.

Head, back of the neck, and sides of the chest black; back, wing-coverts, and scapularies dark greyish brown inclining to cinnamon; primaries black; tail white, crossed near the extremity by a broad band of black; sides of the face, throat, and all the under surface white; eye rich primrose-yellow; wattles primrose-yellow; bill pale yellow, with a horn-coloured tip; tarsi purplish red; scales black; spur yellow.

Sp. 501. LOBIVANELLUS PERSONATUS, *Gould*.

MASKED PLOVER.

Lobivanellus personatus, Gould in Proc. of Zool. Soc., part x. p. 113.

Al-ga-ra-ra, Aborigines of Port Essington.

Wattled Plover, Residents of Port Essington.

Lobivanellus personatus, Gould, *Birds of Australia*, fol., vol. vi. pl. 10.

This Plover, which is as abundant in the northern parts of Australia as the Wattled Pewit is in the eastern, is more elegantly formed than that species, being of the same size in the body, but with more lengthened legs; the fleshy wattles surrounding the eyes are much more extensively developed;

the crown of the head only in the present species is black, while in the Wattled Plover the sides of the chest and upper part of the back are of the same colour. It is a very common bird in the Cobourg Peninsula, inhabiting swamps, the borders of lakes, and open spots among the mangroves, and, like its near ally, is mostly seen associated in small families. It is rather a noisy species, frequently uttering a note, which is not unlike its native name, both while on the wing and on the ground.

T. F. Gregory, Esq., informs me that he found this beautiful little wader at Breaker Inlet; where it frequented the sand-banks in pairs, and was very shy; that the hood or membranous sheath which covers more than half the head is of the clearest gamboge-yellow, and, when the bird is alive, resembles the petal of a flower; and that it lies close over the feathers, and protects them when the beak is plunged into the sand in search of food; the eye is also bright yellow; that the spine at the shoulder is used very vigorously and with advantage when attacked by birds of prey. The body is slight, very elegantly proportioned, and the general appearance of the bird is very graceful.

The stomach of the Masked Plover is very muscular, and its food, while living in the marshes, consists of aquatic coleoptera and small crustaceous animals, but when on the plains of the interior it readily accommodates itself to the kind of insect-food it may find there.

The task of incubation is performed during the months of August and September, the eggs, which are two or three in number, being laid in a hollow on the bare ground at the edge of a flat adjoining a salt-marsh; they are of a dull olive-yellow, dashed all over with spots and markings of blackish brown and dark olive-brown, particularly at the larger end; they are one inch and five-eighths long by one inch and three-sixteenths broad, somewhat pointed at the smaller end.

Crown of the head and occiput jet-black; sides of the face, back of the neck, rump, and all the under surface pure white;

back and scapularies light brownish grey ; wing-coverts grey ; primaries deep black ; secondaries white at the base on their inner webs, cinnamon-grey on their outer webs, and largely tipped with black ; tail white at the base, largely tipped with black, the extreme ends of the feathers being cinnamon-grey, particularly the two centre ones ; irides primrose-yellow ; wattles lemon-yellow ; bill lemon-yellow at the base, black at the tip ; legs and feet carmine-red ; the scales in front blackish green.

Total length 12 inches ; bill $1\frac{3}{4}$; wing $8\frac{3}{4}$; tail 4 ; tarsi $2\frac{3}{4}$.

Genus SARCIOPHORUS, *Strickland*.

A genus nearly allied to the last, and of which a single species inhabits Australia.

Sp. 502. SARCIOPHORUS PECTORALIS.

BLACK-BREASTED PLOVER.

Charadrius pectoralis, Cuv. in Mus. Par.—Wagl. Syst. Av., sp. 8.

—— *tricolor*, Vieill. 2^{nde} Edit. du Nouv. Dict. d'Hist. Nat., tom. xxvii. p. 147.

—— *vanelloides*, Peale.

Sarciophorus pectoralis, Gould, Birds of Australia, fol., vol. vi. pl. 11.

This species is known to inhabit Tasmania, South Australia, and New South Wales, but over what other portions of the Australian continent its range is extended has not yet been ascertained. I have never seen it in collections either from the western or northern shores. Its favourite localities are open sterile downs, thinly covered with grasses or other kinds of vegetation ; but it is occasionally to be met with on the grassy flats in the neighbourhood of rivers. It is much more tame in its disposition than the Wattled Plover, and permits a near approach before taking alarm. It trips very quickly

over the ground, much after the manner of the true Pewits, and when flushed generally flies off in a straight line. I have never seen it mount in the air like the Common Lapwing, or perform during flight those sudden turns and dips so frequently exhibited by that species. So far as I have observed, it goes in pairs, or at most in companies of three. Nearly full-grown young were obtained in the month of November, from which we may infer that it is a very early breeder.

The eggs are three or four in number, and are deposited on the bare ground without any nest; they are one inch and a half long by one inch and an eighth broad; ground-colour light olive-grey, very thickly blotched and stained with brown, so as nearly to cover the surface, particularly at the larger end.

The sexes are alike in colour, but the female has the lobe before the eye much smaller than in the male.

Crown of the head, line running from the angle of the mouth beneath the eye, and down the sides of the neck, and a broad crescent-shaped band across the breast jet-black; line from the eye to near the occiput, chin, throat, flanks, abdomen, upper and under tail-coverts white; back light brown; primaries brownish black; wing-coverts bronzy brown, passing into black towards the tip of each feather, and tipped with white; a few of the outer secondaries white, margined on the extremities of their outer webs with black, then a few entirely white, and the last two marked like the coverts, but largely margined with white; scapularies and lower part of the back bronzy brown; rump dark olive, with bronzy reflexions; tail white, crossed near the tip by a broad irregular band of black; tip of the upper mandible horn-colour; the remainder of the bill beautiful primrose-yellow; naked parts of the thigh and knees dark pink; tarsi and toes blackish brown, the latter inclining to pink-red; irides yellow, surrounded by a rim of deep primrose extending in an oblique direction to the fleshy protuberance at the base of the upper

mandible, which is blood-red in the male, much lighter or flesh-red in the female.

Genus SQUATAROLA, *Cuvier*.

The single species of this genus inhabits Europe, Asia, North America, and occasionally occurs in Australia. It differs from *Charadrius* in having a small hind-toe.

Sp. 503. SQUATAROLA HELVETICA.

GREY PLOVER.

Tringa helvetica, Linn. Syst. Nat., vol. i. p. 250.

Vanellus helveticus, Briss. Orn., vol. v. p. 106, tab. 10. fig. 1.

Charadrius hypomelas, Pall. Reise, vol. iii. p. 699.

Swiss Sandpiper, Lath. Gen. Syn., vol. v. p. 167.

Tringa squatarola, Linn. Faun. Suecica, No. 186.

Vanellus griseus, Briss. Orn., vol. v. p. 100, tab. 9. fig. 1.

—— *melanogaster*, Bechst.—Temm. Man. d'Orn., vol. ii. p. 345.

Vanneau Pluvier, Buff. Pl. Enl., 854.

Squatarola helvetica, Cuv.—G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 62.

—— ———, var. *b*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août 1856.

Grey Plover and *Grey Sandpiper* of British authors.

Squatarola helvetica, Gould, Birds of Australia, fol., vol. vi. pl. 12.

I have compared specimens of this bird killed in Australia with others obtained in India, North America, and Europe, and find the whole of them identical. I have never seen an Australian specimen with the rich black colouring of the under surface which renders Asiatic, American, and European specimens so conspicuous in the breeding-season, hence we may infer that it is only the young birds that wander so far to the southward as Australia. The specimens I possess are from different parts of the country, some being from the eastern and others from the western colonies.

The Grey Plover affects the low muddy shores of the sea-coast and the mouths of large rivers, and feeds upon worms, various kinds of insects, and their larvæ.

Crown of the head, upper surface, and wings light olive, mottled with white; primaries blackish brown, with the basal portion of their inner webs and the apical half of their shafts white; rump white; tail white, crossed by broad bars of light olive; face and all the under surface white, with numerous brown striæ, and a wash of buff on the sides of the neck and across the breast; irides blackish brown; bill and feet blackish olive.

Genus CHARADRIUS, *Linnaeus*.

The Australian fauna comprises a single species of this genus, the representative of the *C. pluvialis* of Europe, from which it differs in having brown axillaries.

Sp. 504. CHARADRIUS ORIENTALIS.

AUSTRALIAN GOLDEN PLOVER.

Charadrius pluvialis orientalis, Temm. et Schleg. Faun. Jap., p. 104, tab. 62.

Charadrius xanthocheilus, Gould, Birds of Australia, fol., vol. vi. pl. 13.

Although nowhere very abundant, this bird is generally dispersed over all the colonies from Tasmania to the extreme north of the continent of Australia. In all probability it is the same bird that is found in the island of Java, and more than probably the species inhabiting India; its range therefore is very extensive. I obtained several specimens on the banks of the Derwent in Tasmania, observed it in small numbers on the flats below Clarence Plains, and also killed examples on one of the islands in Bass's Straits.

Its habits, manners, and general economy so closely re-

seem those of the Golden Plover (*Charadrius pluvialis*) of Europe, that a description of one is equally characteristic of the other. Like that bird, it frequents open plains in the neighbourhood of marshy lands or the sea-beach, runs with amazing facility, and flies with equal rapidity.

Indications of the black colouring of the breast or breeding plumage begin to appear early in the spring, and as the season advances every variety of colouring occurs from the mottled yellow of winter to the uniform black under-surface of summer, which latter state however is but seldom seen ; whence I am induced to doubt its remaining to breed in any of the southern parts of Australia.

The full summer plumage is as follows :—The whole of the upper surface and tail very dark brown, each feather with a series of oblong yellowish and whitish spots along their margins ; primaries dark brown, with white shafts ; lores, sides of the face, breast and all the under surface black, bounded by a broad mark of white, which crosses the forehead, passes over the eye, down the side of the neck and along the flanks, where it becomes broad and conspicuous ; under wing-coverts and the lengthened feathers covering the insertion of the wing uniform pale silvery brown ; irides dark brown ; bill dark olive ; legs and feet leaden grey.

In the winter season the black and white markings of the under-surface entirely disappear, and are replaced by a buffy tint mottled with brown, the mottled appearance being produced by a triangular spot of pale brown at the tip of each feather.

I formerly considered the Australian Golden Plover to be the *Charadrius xanthocheilus* of Wagler, but upon a reconsideration of the subject I find it is impossible to determine to what species that name was assigned ; I believe that the present bird is the same as the *C. orientalis* of Temminck and Schlegel, and that name I therefore adopt.

Genus EUDROMIAS, *Boie*.

Of this genus of upland Plovers two species at least are known, viz. the *E. morinellus* of Europe and the *E. australis* of Australia.

Sp. 505. EUDROMIAS AUSTRALIS, *Gould*.

AUSTRALIAN DOTTREL.

Eudromias australis, Gould in Proc. of Zool. Soc., part viii. p.174.

Morinellus australis, Bonap. Compt. Rend. de l'Acad. Sci., tom. 43.
séance du 2 Août, 1856.

Eudromias australis, Gould, Birds of Australia, fol., vol. vi. pl. 15.

By the ornithologist, the bird forming the subject of the present memoir will be looked upon with the greatest interest, as an additional species of a genus of which hitherto only a single example was known, namely the Common Dottrel (*Eudromias morinellus*) of the British Islands. Nothing can be more interesting than to observe how beautifully many of the species of the limited groups of the northern hemisphere are represented by others in Australia: for instance, the members of the genera *Himantopus*, *Avocetta*, *Glareola*, &c., of which a single species only of each has yet been discovered in either country. For my first knowledge of this very rare bird I am indebted to the kindness of Captain Sturt, who sent me a young individual from the high lands near the river Murray in South Australia; subsequently I received numerous examples from Victoria and South Australia.

Many years must probably elapse before anything is known of the habits and economy of the Australian Dottrel; for even those of its European ally, *Eudromias morinellus*, are but little understood, in consequence perhaps of its affecting localities far removed from the habitation of man. If its flesh should be similar in flavour to that of our own highly prized

bird, the time will not be far distant when it will be diligently sought after as an equally choice viand for the table.

The *Eudromias australis* inhabits the low hills and plains of the interior of Australia, a kind of habitat precisely similar to that of its European prototype.

“This singular bird,” says Captain Sturt, in the Appendix to his account of his recent expedition into the interior of South Australia, “made its appearance in 1841 suddenly on the plains of Adelaide, seeming to have come from the north. It occupied the sand-hills at the edge of the mangrove swamps, and fed round the puddles of water on the plains. This bird afforded my friend, Mr. Torrens, an abundant harvest, as it was numerous round his house; but although some few have visited South Australia every subsequent year, they have never appeared in such numbers as on the first occasion. It runs very fast along the ground. Mr. Browne and I met or rather crossed several flights of these birds in August of 1845, going south. They were on the large open plains, and were very wild.”

Forehead and all the upper surface light sandy buff, the centres of the feathers being brown; primaries brownish black with sandy buff shafts, and all but the first four broadly margined with the same; throat buffy white, below which a crescent-shaped mark of blackish brown; chest, flanks, and under surface of the wing buff, passing into reddish chestnut on the abdomen, beyond which the vent and under tail-coverts are white; tail brownish black, the centre feather margined with buff, the outer ones with white; bill dark olive-brown; feet yellowish brown.

It will be interesting should the female of this bird prove larger and more richly coloured than the male, as is the case with the European Dottrel.

Total length $7\frac{1}{2}$ inches; bill $\frac{7}{8}$; wing $5\frac{1}{4}$; tail $2\frac{1}{2}$; tarsi $1\frac{3}{8}$.

Genus CIRREPIDESMUS, *Bonaparte*.

This generic term was proposed for the *Charadrius geoffroyi* of Wagler, and the *C. pyrrhothorax* of Temminck ; to which, perhaps, must be added the *C. asiaticus* of Pallas ; and if so, my *C. veredus* must sink into a synonym, since it is the young of that species.

Sp. 506. CIRREPIDESMUS ASIATICUS ?

ASIATIC DOTTREL.

Charadrius asiaticus et caspius, Pall. ?

Cursorius isabellinus, Horsf.

Morinellus caspius, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii.

Pluvialis xanthocheilus, Bonap.

Charadrius veredus, Gould in Proc. of Zool. Soc., 1848, p. 38.

Charadrius veredus, Gould, Birds of Australia, fol., vol. vi. pl. 14.

From the time I characterized the bird to which I gave the name of *Charadrius veredus* in the 'Proceedings of the Zoological Society' for 1848 to the present moment, it has been a stumbling-block to all ornithologists, myself included. Horsfield regarded it as identical with *Cursorius isabellinus* ; and Bonaparte considered it to be the young of *C. xanthocheilus*, which it certainly is not. My *C. veredus* is a young bird which closely resembles, in form, a specimen in fully adult summer dress which I have direct from China, and with which I have no doubt of its identity, whatever species the latter may be ; I say whatever it may be, because the adult specimen alluded to differs slightly from the *C. asiaticus* of Pallas ; the difference, however, is only in its greater size, for my specimen and the mounted one in the British Museum, with which I have carefully compared it, are precisely alike. My *C. veredus* and the Chinese bird have very thin bills and very long legs, which I deem it necessary to mention, because there are other species of Asiatic Plovers in

the British Museum with thick bills and rather shorter tarsi; these are doubtless distinct. Mr. Wallace brought skins of my *C. veredus* from Macassar, and there is a specimen in the British Museum from Japan, which favours the opinion that these young birds, like the young of other species of this family, wander far away from their true home.

A specimen of this species was procured at Port Essington by Gilbert, and a second has been sent to me from Sydney by Strange. Judging from its structure and the character of its plumage, it would seem to be nearly allied to the restricted genus *Eudromias*.

Crown of the head and all the upper surface brown, each feather narrowly fringed with buff; primaries blackish brown, the shaft of the first white; tail brown, narrowly edged with white, the brown colour gradually fading as the feathers recede from the centre; face, a broad stripe over the eye and the chin buffy white; sides and back of the neck and the breast buffy brown; abdomen and under surface white; irides very dark brown; legs and feet brownish flesh-colour; bill dark brown.

Total length $8\frac{1}{2}$ inches; bill $1\frac{1}{8}$; wing $6\frac{1}{2}$; tail $2\frac{1}{8}$; tarsi 2.

Genus *ÆGIALITES*, Boie.

The little Ring-Dottrels, composing the genus *Ægialites*, inhabit both the Old and the New World. Two species at least are found in Europe and Asia, and three in Australia. They are rather dumpy little birds, with large heads, generally banded with black, and have a gorget of the same hue on the chest; their bills are short and pulpy, and are generally yellow at the base, while their legs are fleshy and mostly of this colour. The sexes are alike in their markings, and the young attain their full plumage in the second year.

Sp. 507. ÆGIALITES HIATICULA.

RING-DOTTREL.

Charadrius hiaticula, Linn. Syst. i. 253. 1.

—— *torquatus*, Briss. Orn. 5. 63. 8. t. v. f. 2.

—— *homeyeri*, Brehm.

I possess an undoubted Australian specimen of this common European species. How it wandered that far, or if stragglers frequently visit that distant region, I cannot say. Hitherto the British Islands, the continent of Europe, North Africa, and Persia were considered the extent of its range, but we must now include Australia therein. The specimen above alluded to was killed at Port Stevens; it is not quite adult, still the markings of the head and breast are sufficiently apparent to enable me to identify it with our own bird.

Sp. 508. ÆGIALITES MONACHA.

HOODED DOTTREL.

Charadrius monachus, Geoff. in Mus. Paris.—Wagl. Syst. Av., sp. 15.

—— *cucullatus*, Vieill., Nouv. Dict. d'Hist. Nat., p. 136.

Ægialitis monachus, Gould in Syn. Birds of Australia, part ii.

Hiaticula monacha, List of Birds in Brit. Mus. Coll., part iii. p. 70.

Hiaticula monacha, Gould, Birds of Australia, fol., vol. vi. pl. 18.

This elegant species of Ring-Dottrel is universally dispersed over the sea-coasts of the southern parts of Australia, but is perhaps more abundant in Tasmania and the islands in Bass's Straits than elsewhere; I never observed it far inland, in which respect it differs from the habits of the Common Dottrel of Europe, to which it is so nearly allied. I frequently found its two eggs on the shingly beach, in a slight depression hollowed out by the bird for their reception just above high-water mark: these are so similar in appearance to the material upon which they are deposited that they would readily escape the attention of a casual observer; those I

collected were of a pale stone-colour, sprinked over with numerous small irregularly-shaped marks of brownish black, and are one inch and a half long by one inch and an eighth broad.

While tripping over the sandy beach, which it does with much elegance of movement, the black head of the male shows very conspicuously.

The male has the head, fore-part of the neck, and a band across the upper part of the back sooty black; back of the neck and all the under surface white; back, shoulders and tertials greyish brown; centre of the wing and the basal portion of the internal webs of the primaries and secondaries white, the rest black; two middle tail-feathers black; the three next on each side white at the base and tip and black in the centre, the remaining feathers wholly white; irides yellowish or orange-brown; eyelash rich reddish orange or scarlet; bill rich orange at the base, passing into yellow and black at the tip; legs flesh-colour.

The female differs from the male in having the crown mottled with black and white, the face and throat white, and in having only a narrow line of black at the base of the neck behind.

Youthful birds may be known by their resembling the female, but having the feathers of the back and upper surface narrowly fringed with brownish black.

Sp. 509. **ÆGIALITES NIGRIFRONS.**

BLACK-FRONTED DOTTREL.

Charadrius nigrifrons, Cuv. in Mus. Paris.—Temm. Pl. Col., 47. fig. 1.

— *melanops*, Vieill. Nouv. Dict. d'Hist. Nat., tom. xxvii. p. 139.

Ægialitis nigrifrons, Gould in Syn. Birds of Australia, part ii.

Hiaticula nigrifrons, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 71.

***Hiaticula nigrifrons*, Gould, Birds of Australia, fol., vol. vi. pl. 20.**

The temperate latitudes of Australia constitute the true

habitat of this beautiful little Dottrel; for, so far as I have been able to learn, it is never found in the northern part of that country, nor can Tasmania claim it as a part of its avifauna; the climate of the latter country being less genial, and the seas which wash its shores being too rough and boisterous for the abode of so delicate a bird as the *Ægialites nigrifrons*. Even in Australia the exposed sea-beaches seem to be avoided, and it is most frequently found in the interior of the country, on the margins of pools and lakes, and in the most retired situations. It also frequents the sides of rivers which sparingly occur in the heart of the country; I frequently encountered it while descending the Namoi, on the lowest part of which river I was so fortunate as to discover its eggs. They were deposited on the ground beside the stream; they now grace my cabinet, and are esteemed as one of my greatest rarities, and to which many pleasing associations are attached, connected with my visit to the distant region in which they were procured.

The colonies of Swan River, South Australia, and New South Wales are equally visited by this bird; and its range appears to be general over those portions of Australia lying between the twenty-eighth and thirty-seventh degrees of south latitude.

No member of the genus is more tame than the present; for as it trips nimbly along the sides of the pools it will allow of a sufficiently near approach for the observer to see the colour of the eye, and the brilliant ring of scarlet which encircles it; and when forced to take wing it merely flies to the opposite bank or to a very short distance, and then alights again.

The two eggs above mentioned so nearly resembled the surface of the sand-bank upon which they were deposited, that it was by the merest chance they were not passed by unnoticed. In form they nearly resemble the eggs of other Dottrels, being considerably pointed at the smaller end; they

are one inch and three-sixteenths long by three-quarters of an inch broad; of a pale stone or dirty white colour, very numerous but minutely speckled with dark brown.

The sexes are precisely alike in the colouring of their plumage, and nearly so in size.

Forehead, a stripe commencing at the eye, passing over the ear-coverts and round the back of the neck, and a broad band crossing the chest and advancing somewhat down the centre of the breast black; a stripe of white passes over each eye and continues round the back of the neck, separating the black band from the crown, which, with the back, the long tertials, and the middle of the wing, are brown; scapularies deep chestnut; tips of the greater coverts white, forming an obscure band across the wing; primaries black; throat, abdomen, and under tail-coverts white; two middle tail-feathers brown at the base and black at the tip; the next three on each side white at the base, gradually passing into blackish brown, and largely tipped with white, the remainder entirely white; bill rich orange at the base and black at the tip; feet orange flesh-colour in some, in others pale flesh-colour; irides dark brown; eyelash bright red.

The young have a crescentic mark of a lighter colour on the feathers of the upper surface, and have the colouring of the plumage and soft parts less brilliant and well-defined than the adults.

Genus *ÆGIALOPHILUS*, Gould.

In accordance with the spirit of minute subdivision which now pervades all branches of natural science, I have for a long time considered that the small Plovers hitherto comprised in the genus *Ægialites*, of which the *Æ. hiaticula* is the type, required a further subdivision; I therefore propose the term above given for the *Æ. cantianus* of Europe, and to associate with it the *Æ. ruficapillus* of Australia. There are many

other species of the form, all or nearly all of which have black bills and long legs, and are less banded with black than the members of the genus *Ægialites*. They have a different note, are very nimble of foot, and affect situations bordering the open sea.

Sp. 510. *ÆGIALOPHILUS RUFICAPILLUS*.

RED-CAPPED DOTTREL.

Charadrius ruficapillus, Temm. Pl. Col., 47. fig. 2.

—— *marginatus*, Geoff. in Mus. Paris.—Less. Traité d'Orn., p. 544.

Hiaticula ruficapilla, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 71.

Sand-Lark and *Red-necked Plover*, Colonists of Swan River.

Hiaticula ruficapilla, Gould, Birds of Australia, fol., vol. vi. pl. 17.

The Red-capped Dottrel is universally dispersed over every part of the sea-shores of Australia that I have visited, and everywhere evinces a greater preference for the shingly beach of the ocean, and especially for deep salt-water bays, than for the sides of rivers and inland waters; it is very numerous in Tasmania, on Flinders' Island, on the sand-banks at the mouth of the Hunter in New South Wales and at Port Adelaide in South Australia; and Gilbert states that it is equally abundant in Western Australia, where it is likewise so strictly a bird of the coast that he never saw it inland. It is usually met with in pairs, but may be occasionally observed associating in small companies.

I found many of its eggs on Flinders' Island, deposited in pairs in a slight depression of the sand among the shingle just above high-water mark; they were very difficult to detect, in consequence of their colouring very closely assimilating to that of the material among which they were placed; those procured by Gilbert in Western Australia were deposited on a small mound of sand and sea-weed on the sandy beach at a distance of from ten to twenty yards above high-water

mark. The breeding-season comprises September and the three or four following months.

- The stomach is very muscular, and the food consists of small mollusca of various kinds.

Like the *Tringa*, this bird resorts to every possible device in order to lure an intruder from its nest: throwing itself down upon its chest and flapping its wings as if in the agonies of death, it will so continue until he has approached almost near enough to place his hand upon it, when it moves along for several yards, dragging one of its legs behind, and if still followed up attempts to fly, and so well imitates the motion of a bird wounded in the wing, that the intruder is easily misled, and the eggs remain undiscovered.

The eggs, which are an inch and a quarter in length by seven-eighths of an inch in breadth, are of a pale stone-colour, sprinkled all over with small irregular blotches of brownish black.

The male has the forehead crossed by a broad band of white, which gradually diminishes to a point at the posterior angle of the eye; above this is another band of black, which also diminishes to a point at the same place; from the angle of the mouth to the eye is a line of black, which is continued from the posterior angle of the eye down the sides of the neck; crown of the head, nape, and back of the neck rich rusty red; all the upper surface and wings pale brown, each feather margined with a still lighter tint; primaries blackish brown; the shafts and extreme edge of the inner webs white; four central tail-feathers dark brown, the remainder white; all the under surface white; irides very dark brown; bill dark reddish brown; naked part of the legs above the tarsi dark greenish grey; tarsi light grey; feet blackish brown.

In the female the distribution of colour is precisely the same, but the hues are all much paler, and the marks about the face are light brown instead of black.

Genus OCHTHODROMUS, *Reichenbach*.

Professor Reichenbach has instituted this genus for the *Charadrius wilsonius* of America, and as the bird I have called *Hiaticula inornata* is precisely of the same form, I now place it in the same genus. There are many other species in India and America.

Sp. 511. OCHTHODROMUS INORNATUS, *Gould*.

ALLIED DOTTREL.

Hiaticula inornata, Gould, *Birds of Australia*, fol., vol. vi. pl. 19.

I have for some years had in my possession two examples of this species, the uniformity of whose colouring suggested the term of *inornata* as an appropriate appellation; I have received other examples with a brighter style of marking, which is doubtless characteristic of the summer or breeding-season, and which renders the above name only applicable to the bird when in the plumage of winter. It is nearly allied to the *Ochthodromus wilsoni* of North America, of which it forms a beautiful representative in the distant country of which it is a native.

I possess no information whatever as to the extent of the range of this species; Gilbert found it abundant on most of the sandy points and bays in the neighbourhood of Port Essington, and I believe that it also inhabits the islands in Torres' Straits and New Guinea.

The stomachs of those dissected contained the remains of small crustaceous animals, and a large portion of sand.

The male in summer has the forehead white, above which is a stripe of black; all the upper surface pale greyish brown; crown of the head rufous, which colour is continued on the back and sides of the neck, and meeting on the centre of the breast forms a pectoral band; wings dark brown, the coverts

and secondaries margined and tipped with white ; the shafts of the primaries are also white ; rump white ; six central tail-feathers dark brown tipped with white ; the lateral feathers white, tinged with brown in the centre ; lores, line below the eye and ear-coverts black ; chin, throat and all the under surface white ; irides dark brown ; bill blackish grey ; tarsi light ash-grey ; feet greenish grey.

The winter plumage differs in wanting the rufous tints about the head, neck and breast ; in the ear-coverts being brown, and in having a brown patch like the commencement of a band on either side of the chest.

Sp. 512. OCHTHODROMUS ? BICINCTUS.

DOUBLE-BANDED DOTTREL.

Charadrius bicinctus, Jard. and Selb. Ill. Orn., vol. i. pl. 28.

Chestnut-breasted Plover, Lath. Gen. Hist., vol. ix. p. 324.

Ægialitis bicinctus, Gould in Syn. Birds of Australia, part ii.

Hiaticula bicincta, Gould, Birds of Australia, fol., vol. vi. pl. 16.

Mr. Ronald C. Gunn informs me that he has found this fine species plentifully dispersed along the northern shores of Tasmania, particularly at Circular Head and its neighbourhood. I never but once encountered it in a state of nature myself, and judging from the infrequency of its occurrence in collections from Australia, its true habitat would seem to be but seldom visited. During my stay at George Town, considerable numbers visited the common in the vicinity, and appeared to be acting under some migratory impulse, for after remaining a day or two they departed to some other part of the country ; not, however, before I had procured as many specimens as I required. This occurred about the 15th of May, the middle of the Australian winter. These flights consisted of birds of various ages and in different states of plumage, some having mere indications only of the bands on the breast, while others had these marks well

defined, which appears to be the full summer or breeding plumage. The circumstance of their assembling in large flocks, and evincing a partiality to the green sward rather than to the shingly beach, leads me to assign to this bird a different habit from the more typical members of the genus, and the dark colour and greater length of its tarsi and bill show an approach to the more typical Plovers. It would not surprise me if it should prove that, instead of breeding on the sandy shores, this species resorts for that purpose to inland districts ; a point it would be most interesting to ascertain. Of the numerous specimens I killed at George Town, no two were alike ; consequently I am uncertain whether the sexes when adult are similarly marked or not, but, judging from other species of the genus, I presume they are.

The Double-banded Dottrel runs over the ground with great swiftness ; all in the flock take flight together, and mounting high in the air, which they pass through very quickly, suddenly wheel about, and after flying a mile or two return, and pitch again within a hundred yards of the spot from whence they had arisen.

In the adult state a broad stripe of white crosses the forehead, above which the feathers are black, which colour gradually passes into the uniform pale brown which covers the whole of the upper surface ; outer webs of the primaries blackish brown ; inner webs paler ; throat white, surrounded with a narrow line of black, which commences above the upper mandible and continues down the sides of the neck and forms a broad band across the breast ; across and down the centre of the abdomen a broad band of bright chestnut ; the rest of the under surface pure white ; two centre tail-feathers greyish brown, those on each side paler, and the exterior ones white ; irides blackish brown ; eyelash scarlet ; bill black, slightly tinged with olive ; feet pale sickly yellowish white ; joints of the knees and toes browner.

Genus ERYTHROGONYS, *Gould*.

The single species of this genus appears to be strictly Australian, for I have never seen examples from any other country.

In structure, actions and economy this elegantly formed bird is very nearly allied to the *Egialites* on the one hand, and the *Schœnicli* on the other.

Sp. 513. ERYTHROGONYS CINCTUS, *Gould*.

RED-KNEED DOTTREL.

Erythrogonyx cinctus, Gould in Proc. of Zool. Soc., part v. p. 155.
Vanelhus rufiventris, Less.

Erythrogonyx cinctus, Gould, Birds of Australia, fol., vol. vi. pl. 21.

Over what extent of country the Red-kneed Dottrel ranges is yet to be determined; the south-eastern portions of Australia are the only localities from which, if I recollect rightly, I have ever seen or received specimens.

It is a summer visitor to New South Wales, where it is esteemed a rare bird, and where its presence is probably altogether dependent upon the kind of season that may occur: its natural habits leading it to frequent the borders of lagoons, muddy flats and the banks of rivers; none but wet and humid seasons, which, it is to be regretted, are so unfrequent in Australia, are suitable to it: I believe it is seldom or ever seen either on or even near the sea-coast, but that it is strictly an inhabitant of the interior. In October and November 1839, I found it tolerably abundant on the flats near Aberdeen, and on the upper part of the Dartbrook, a tributary of the River Hunter, and on visiting the Mokai and Namoi in the following month I observed it to be equally numerous on those rivers. I seldom saw more than two together, and these were almost always male and female: they appeared, as I have

before stated, to prefer soft muddy banks to the stony or shingly margins of the rivers. It is a most showy and active little bird, and is so tame that I had not the slightest trouble in shooting as many as I pleased. Its actions and manners are very peculiar, and partake both of those of the Dottrell and the Sandpiper; having the stooping carriage of the former, and the quick bobbing motion of the head and tail of the latter: its olive-green plumage and long tertiaries also ally it to the Sandpipers.

Those who have closely observed the motions of this bird while running over the ground must have remarked that they much resemble those of the Common Summer Snipe (*Actitis hypoleucos*), with which, however, it cannot be generically associated. The flight of the two birds is very different.

The sexes present no variation in the colour or marking of their plumage, neither did I detect any difference in size by which they might be distinguished. Although they were probably breeding at the period of my visit to the above-mentioned localities, I could never discover their eggs, nor could the two intelligent natives accompanying me either aid or give me any information on the subject.

Its food consists of insects of various kinds.

Head, ear-coverts, back of the neck, and chest black; a small patch under the eye, throat, chest, sides of the neck, centre of the abdomen, and under tail-coverts white, the latter spotted with dark brown; back, centre of the wings, and tertiaries olive, tinged with bronzy brown; tips of the secondaries and the inner webs of the tips of the six contiguous primaries white; rump and two middle tail-feathers olive, the remaining tail-feathers white; flanks chestnut; irides nearly black, with a narrow black eyelash; bill pulpy, pink-red at the base, black at the tip; thigh, knee, and for a quarter of an inch down the tarsus pink-red, the remainder of the tarsus and the toes lively bluish lead-colour.

Total length 7 inches; bill 1; wing $4\frac{1}{4}$; tail $1\frac{7}{8}$; tarsi $1\frac{1}{2}$.

Genus **ACTITURUS**, *Bonaparte*.

An American form, of which the single species is the well-known *Tringa bartramia* of authors, and which is evidently a wide wanderer, examples having been killed in England, on the continent of Europe, and in Australia.

Sp. 514. **ACTITURUS BARTRAMIUS.****BARTRAM'S SANDPIPER.**

Tringa bartramia, Wilson, Am. Orn., vol. ii. p. 353, pl. 59. fig. 2 (Jardine's Edition).

Totanus bartramius, Ib. (Ord's Edition), vol. vii. p. 67.

Actiturus bartramius, Bonap. Comp. List of Birds of Eur. and N. Am., p. 51.

Bartramia laticauda, Less. Traité d'Orn., p. 553.

Tringa longicauda, Bechst.

Totanus variegatus, Vieill. Gal. des Ois., t. ccxxxix.

—— *melanopygius*, Vieill. 2de Edit. du Nouv. Dict. d'Hist. Nat., tom. vi. p. 401.

—— *campestris*, Vieill. 2de Edit. du Nouv. Dict. d'Hist. Nat. tom. vi. p. 400.

Tringoides bartramius, Gray, Gen. of Birds, vol. iii. p. 574, *Tringoides*, sp. 4.

I am indebted to the Directors of the Museum at Sydney for the loan of a very fine example of this species, which they kindly permitted to be sent to England for my inspection. It was shot by an old sportsman, during the Snipe season of 1848, near the water-reservoir, in the vicinity of Sydney. On examination it was found to be a male, and had the stomach filled with aquatic insects.

Speaking of this species, Audubon says, "Like all experienced travellers, it appears to accommodate itself to circumstances as regards food, for in Louisiana it feeds on cantharides and other coleopterous insects; in Massachusetts on grasshoppers, on which, it is said, it soon grows very fat;

in the Carolinas on crickets and other insects, as well as the seeds of the crab-grass (*Digitaria sanguinaria*); and in the barrens of Kentucky often picks the strawberries. Those which have fed much on cantharides require to be very carefully cleaned, otherwise persons eating them are liable to suffer severely."

Family GLAREOLIDÆ.

I think Bonaparte was right when he instituted a family name for the Pratincoles, for few groups of birds are more isolated. Most modern ornithologists associate them with the Plovers; in many of their features they show an affinity to the Swallows, with which group the illustrious Linnæus originally placed them.

Genus GLAREOLA, *Brisson*.

Species of this form inhabit India, the Indian Islands, Europe, and Africa.

Sp. 515. GLAREOLA GRALLARIA, *Temm*.

AUSTRALIAN PRATINCOLE.

Glareola grallaria, Temm. Man. d'Orn., tom. ii. p. 503.

—— *isabella*, Vieill. Gal. des Ois., tom. ii. p. 159, pl. 263.

—— *australis*, Leach in Linn. Trans., vol. xiii. p. 132, pl. 14. figs. 1, 2.

Australasian Pratincole, Lath. Gen. Hist., vol. ix. p. 366.

Stiltia grallaria, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août 1856.

Glareola grallaria, Gould, Birds of Australia, fol., vol. vi. pl. 22.

This species of Pratincole possesses several remarkable specific distinctions, the great length of the tarsi and primaries, which, combined with the graceful contour of its body and the small size of its head, render it the most elegant species of the genus that has yet been discovered. The figure in Vieillot's 'Galérie des Oiseaux' is far less accurate than the description.

The bird is there portrayed with the primaries brown, whereas they should be black; the white of the throat is also much less defined in the bird than it is in the drawing; this mark, which is so conspicuous in the other members of the genus, being scarcely distinguishable in the present species from the surrounding reddish-buff colouring of the head and neck.

While traversing the plains bordering the river Namoi, in New South Wales, I once had a transient view of this interesting bird; it was on the wing, and so rapid and extended was its flight, and so close did it keep to the ground, that I had scarcely satisfied myself as to what kind of bird it was, before it was lost in the distant horizon. I possess, however, two specimens, both of which were collected in the Moreton Bay district, the eastern portion of the continent of Australia, therefore, may be regarded as one of the localities in which it is found, but which, from its rare occurrence therein, can scarcely be considered its natural habitat: in all probability the vast interior of the country is its native home.

We may reasonably suppose that nature has destined this bird to the same offices in Australia that are performed by the *Glareola pratincola* in Europe, that insects of various kinds constitute its principal food, and that they are taken both in the air and on the ground, as the great development of its wings and legs must give it peculiar facility for capturing them in both situations; future discovery, however, must determine this among numerous other points now unknown respecting the economy of the birds of that comparatively unknown country, Australia.

The male has the head, all the upper surface, wings, and breast light rufous, becoming nearly white on the throat; lores dark brown; primaries and under surface of the wing black; shaft of the outer primary white for three-fourths of its length from the base; abdomen rich chestnut; thighs, upper and under tail-coverts white; central tail-feathers black,

tipped on their outer webs with brown, and on their inner webs with white; lateral tail-feathers white, with an oval spot of brown near the tip of the inner web; the next on each side white, crossed by a band, the inner portion of which is black, and the outer brown; bill red at the base, black at the tip; legs and feet brown.

The young during their first year have all the upper surface light reddish brown; the feathers of the breast with a spot of brown in the centre; the band across the abdomen pale chestnut; in other respects the colouring is similar to that of the male.

Sp. 516. *GLAREOLA ORIENTALIS*, *Leach*.

ORIENTAL PRATINCOLE.

Glareola orientalis, *Leach* in *Linn. Trans.*, vol. xiii. pp. 132, 187, tab. 13. fig. 1, male, fig. 2, female.

Oriental Pratincole, *Lath. Gen. Hist.*, vol. ix. p. 365.

Glareola orientalis, *Gould, Birds of Australia*, fol., vol. vi. pl. 23.

A small collection of birds presented to the Linnean Society in the early part of 1827 by Alexander Macleay, Esq., of Sydney, comprised a pair of these birds; unfortunately the whole were unaccompanied by any information as to the part of Australia in which they had been procured, but as all the other species were peculiar to the eastern and northern parts of the continent, it is reasonable to infer that the present bird was also killed in one or other of those localities. The true habitat of the Oriental Pratincole is India and the neighbouring islands; it is most likely, therefore, that its visits to Australia are only occasional.

Crown and all the upper surface olive; primaries brownish black; secondaries black, glossed with green; tail-coverts and tail white, the apical portion of the latter black; throat white, encircled by a broken ring of black; chest greyish brown; upper part of the abdomen crossed by an indistinct band of

buff, which gradually fades into the white of the vent and under tail-coverts; under surface of the wing rich deep rust-red; bill black; gape yellow; feet blackish brown.

The young of the year is similar in colour, but much paler, and has only an indication of the ring surrounding the throat.

Family HIMANTOPODIDÆ.

The Stilts differ so remarkably from all the other Plovers and Sandpipers, that I have ventured to raise them to the rank of a family. The various species inhabit many parts both of the Old and New Worlds.

Genus HIMANTOPUS, *Brisson*.

Europe, India, and Africa are inhabited by one, North America by a second, South America by a third, New Zealand by a fourth, and Australia by a fifth species of this elegant but singular genus.

Sp. 517. HIMANTOPUS LEUCOCEPHALUS, *Gould*.

WHITE-HEADED STILT.

Himantopus leucocephalus, Gould in Proc. of Zool. Soc., part v. p. 26.
Djah-jar''-uk, Aborigines of the lowland districts of Western Australia

Himantopus leucocephalus, Gould, *Birds of Australia*, fol., vol. vi. pl. 24.

Although the extreme length of the legs of this bird, as compared with the small size of its body, would seem incompatible with easy carriage and graceful deportment, this is in reality not the case, for I never saw a bird which combined more grace of movement and elegance of appearance than the White-headed Stilt, which I for the first time observed in the month of December, near Mr. Edward Uhr's station on the banks of the river Mokai, where it was associated in small

flocks of from six to twenty in number, which, by their picturesque appearance as they ran along the margin and knee-deep in the shallows of the stream, added greatly to the beauty of the scene. This part of the Mokai was one of the most interesting localities I visited in New South Wales; I encamped on its banks for some time, and had no difficulty in obtaining as many specimens of this fine bird as I desired. The flocks were composed of both sexes, in the finest state of plumage; and I ascertained by dissection of numerous specimens that the larger birds were the males. In this locality the Stilts were feeding entirely on insects and small shelled snails, which food was procured on the margin of the stream, or by wading into the shallows: they ran about with great celerity, displaying many graceful, lively actions; their flight on the contrary was heavy and inelegant, and their long legs streaming out behind gave them a very grotesque appearance: while on the wing they continually uttered a plaintive piping cry, as if of distress, but which they seldom emitted when on the ground.

I was unable to obtain any information respecting the nidification of this bird, or to arrive at any conclusion as to its being a stationary or migratory species. It appears to possess an extensive range over the continent, as besides killing it myself in New South Wales, I have received specimens both from South and Western Australia. In the neighbourhood of Perth it is sometimes seen in company with the Avocet (*Recurvirostra rubricollis*), feeding upon freshwater shrimps and aquatic insects.

Back of the neck, back, and wings glossy greenish black, the rest of the plumage pure white; irides pink, margined externally with a deep red ring; bill black; legs and feet deep pink flesh-colour, becoming red after death.

Total length 15 inches; bill $2\frac{1}{2}$; wing $8\frac{1}{2}$; tail 3; tarsi 4; naked space above the knee $2\frac{1}{2}$.

Genus CLADORHYNCHUS, *G. R. Gray*.

The only species of this form known is peculiar to Australia, and differs from *Recurvirostra* in several minor particulars, but principally in the structure of the bill.

Sp. 518. CLADORHYNCHUS PECTORALIS.

BANDED STILT.

Leptorhynchus pectoralis, Dubus in Mem. Roy. Acad. Bruss., 1835.

Himantopus palmatus, Gould, Syn. Birds of Australia, part ii.

Cladorhynchus pectoralis, G. R. Gray, List of Gen. of Birds, p. 69.

Chladorhynchus pectoralis, Gould, Birds of Australia, fol., vol. vi. pl. 26.

During the time that has elapsed since I described this species in the year 1837 I have had an opportunity of examining two other examples, one of which was destitute of the pectoral band on the breast; whether this mark is merely assumed during summer, or is distinctive of the sexes, I regret to say that not even my visit to Australia has enabled me satisfactorily to determine, never having had the good fortune to meet with it in a state of nature. The Banded Stilt is an inhabitant of the southern and western coast, where it lives much after the manner of the Australian Avocet (*Recurvirostra rubricollis*). While at Adelaide I saw a specimen that had been shot in that neighbourhood; and Gilbert, in his Notes from Western Australia, states that he found it on Rottnest Island, but in no other part of the colony. Captain Sturt, who observed it in great numbers during his journey into the interior, says:—"This singular bird, with legs so admirably adapted by their length for wading into the shallow lakes and sheets of water, was seen in large flocks. It was very abundant on Lepson's Lake to the northward of Cooper's Creek; and on Strzelecki's Creek it was sitting on the water making a singular plaintive whistle."

Body white; breast crossed by a broad band of chestnut, bordered anteriorly with black; wings and centre of the abdomen black; bill black; legs reddish yellow. In a specimen, which I presume may be a female, the band on the chest was greyish brown instead of chestnut, and there was no appearance of the black mark on the centre of the abdomen; and in another the pectoral band was apparently disappearing, from which I infer that this mark only exists during the breeding-season.

Family RECURVIROSTRIDÆ.

Every ornithologist must admit that the Avocets are as singular in their habits, actions, and economy, as they are in their structure. I have, therefore, raised them to the rank of a family.

Genus RECURVIROSTRA, *Linnaeus*.

This form, like that of *Himantopus*, is widely distributed over the globe, since species inhabit America, Africa, Europe, India, and Australia, in which latter country, as in Europe, only one species is found.

Sp. 519. RECURVIROSTRA RUBRICOLLIS, *Temm.*

RED-NECKED AVOCET.

Recurvirostris rubricollis, Temm. Man. d'Orn., part ii. p. 592.

—— *novæ-hollandiæ*, Vieill. 2nde Edit. du Nouv. Dict. d'Hist. Nat. , tom. iii. p. 103?

Yü-jin-goo-rong, Aborigines of the lowland districts of Western Australia.

Recurvirostra rubricollis, Gould, Birds of Australia, fol., vol. vi. pl. 27.

The western and southern portions of Australia appear to be inhabited by this beautiful Avocet. I did not myself meet with it during my rambles in New South Wales, but I have now and then seen it in collections from those parts.

Like its European representative, the Red-necked Avocet

frequents the shallow parts of lakes, inlets of the sea, and the muddy banks of rivers, often wading knee-deep in the water, and readily swimming when necessity requires it so to do.

Its food consists of minute marine mollusca and insects, which it gathers from the surface of the mud with its delicately organized bill, the structure of which is admirably adapted for the purpose: not less appropriate is the structure of its feet, which, being partially webbed, enable the bird to pass over the soft surface of the ground with far greater ease than could be effected by any of the Sandpipers, whose toes are divided to their base. In Western Australia the favourite localities of this bird are the lakes in the neighbourhood of Perth and on Rottnest Island, where it is seen in small flocks in company with the *Himantopus leucocephalus*. In South Australia, the River Murray, and the shores of Lake Alexandrina afford situations equally adapted for its existence.

The sexes are alike in plumage, and differ but little in size.

Head and upper half of the neck chestnut, extending downwards on the front of the neck; middle of the wings, primaries and part of the scapularies black, the rest of the plumage white; irides bright red; bill black; legs greyish blue; tarsi and feet tinged with olive.

The habits and economy of the four or five species known of this family are very similar. In England the European bird is called Yelper, from the peculiar noise it makes when flying, while the extraordinary form of its upturned bill has obtained for it the trivial names of Shoe-horn, Cobbler's Awl, Scooper, &c. This elastic whalebone-like organ is doubtless formed for the procurement of some peculiar food which has not yet been fully ascertained. The bird is said, however, to live on sea-worms, aquatic insects, and small crustaceans. Its eggs, which are generally two in number, are laid on the bare sand or among the shingle; and doubtless the breeding of the Australian bird is very similar.

Family LIMOSIDÆ.

The birds of this family range between the Snipes (*Scolopacidæ*) and the Sandpipers (*Tringidæ*). They are large and powerful in form, and differ considerably from both the groups mentioned.

Genus LIMOSA, *Brisson*.

Two very distinct species of this genus inhabit Australia, one the southern and the other the northern divisions of the country; others occur in India, Africa, Europe, and North America.

Sp. 520. LIMOSA MELANUROIDES, *Gould*.

BLACK-TAILED GODWIT.

Limosa melanuroïdes, Gould in Proc. of Zool. Soc., part xiv. p. 84.

Muñ-doore-git, Aborigines of Port Essington.

Limosa melanuroïdes, Gould, Birds of Australia, fol., vol. vi. pl. 28.

On comparison the *Limosa melanuroïdes* will be found of much smaller size than the European species, and to exhibit other differences which, although but slight, fully satisfy me that it is distinct: it is one of the many novelties which rewarded Gilbert's researches in the neighbourhood of Port Essington, and who states that it inhabits shallow muddy swamps and lakes, and that he usually met with it in tolerably large flocks; he also adds that its stomach was extremely muscular, and that its food consists of aquatic insects of various kinds.

In its habits, actions, and general economy it doubtless closely resembles its European ally, and, in all probability, undergoes similar changes of plumage, the dull colouring of winter giving place to a rufous tint in summer.

The winter dress may be thus described :—

Head and all the upper surface greyish brown, with a small streak of black down the centre of the feathers; wings dark brown, shafts white; base of the primaries and secondaries and tips of the greater coverts white, forming a band when the wing is expanded; upper tail-coverts white, forming a conspicuous mark; tail black, with the exception of the two lateral feathers on each side, which are white at the base and black at the tip; neck, breast, and flanks greyish brown; abdomen and under tail-coverts white; irides brown; bill greenish grey, becoming paler on the sides of the upper mandible; legs and feet greenish grey.

Total length 13 inches; bill $3\frac{3}{8}$; wing $7\frac{5}{8}$; tail $3\frac{1}{4}$; tarsi $2\frac{5}{8}$.

Sp. 521. LIMOSA UROPYGIALIS, *Gould*.

BARRED-RUMPED GODWIT.

Limosa uropygialis, Gould in Proc. of Zool. Soc., 1848, p. 38.

Limosa uropygialis, Gould, *Birds of Australia*, fol., vol. vi. pl. 29.

I saw this species in very great abundance, in company with Curlews, Oyster-catchers and Sandpipers, at Pitwater in Tasmania, feeding on the extensive flats left bare by the receding tide; I also observed it on the sandy flats in Spencer's Gulf and on the sand-banks at the mouth of the river Hunter in New South Wales; and in all probability it is dispersed over the whole of the Australian coasts.

Another instance of the law of representation, so frequently spoken of in the course of the present work, is here most conspicuously shown. To a common observer this bird would be considered identical with the Bar-tailed Godwit (*Limosa rufa*) of Europe; but on comparing the two birds, he will find that the Australian has at all times the lower part of the rump strongly barred with brown, while the same part in the *Limosa rufa*, when in the light-coloured dress, is snow-white. The

habits, manners and economy of the two birds are so precisely similar that I was unable to detect any difference ; various kinds of marine insects and small-shelled mollusks are its principal food.

Mr. Macgillivray, however, informs me that one of the specimens sent home by him from Australia was clothed in a rufous dress very similar to the summer plumage of the European species.

All the upper surface brownish grey, becoming dark brown on the centre and nearly white on the edges of the feathers ; primaries brown with white shafts ; rump and upper tail-coverts conspicuously barred with brown and white ; tail alternately barred with brown and white ; throat and abdomen white ; neck and breast brownish grey ; under wing-coverts and flanks barred with brown and white ; bill white at the base, becoming brown at the tip ; irides dark brown ; legs brownish black.

Total length 15 inches ; bill $3\frac{1}{4}$; wing $8\frac{3}{4}$; tail $3\frac{1}{4}$; tarsi $2\frac{1}{8}$.

In the youthful state the feathers of the back are of a much darker hue, and the tertiaries are conspicuously toothed with white on their margins.

Every ornithologist is aware how difficult it is to trace our own Bar-tailed Godwit to its breeding-place ; so great indeed is it that its eggs are desiderata in nearly every European cabinet ; and this want of knowledge is equally felt with regard to the Australian species, for we have not the most remote idea what country it resorts to during the breeding-season, and no Australian egg has yet been collected which can with certainty be referred to this bird ; any information, therefore, on this point will be received by me, and I am sure by every other ornithologist, with pleasure.

Family TRINGIDÆ.

The members of this family are very numerous, and comprise many distinct forms or genera.

These strand and shore birds are very generally distributed over the face of the globe, there being few countries in which they are not found. In Australia there are species some of which closely resemble others inhabiting Europe.

Genus LIMNOCINCLUS, *Gould*.

The two species of this genus range over many degrees of latitude, the *Limnocinclus pectoralis* of America being one of them, the following species the other. They, or at least the Australian bird, inhabit marshy districts and the borders of rivers; and run about among the grass and herbage much after the manner of the true Snipes. Of their nidification little or nothing has yet been recorded, and I would especially direct the attention of Australian ornithologists to this point so far as it regards the bird inhabiting their country.

Sp. 522. LIMNOCINCLUS ACUMINATUS.

MARSH TRINGA.

Totanus acuminatus, Horsf. Lin. Trans., vol. xiii. p. 192.

Tringa australis, Jard. and Selb. Ill. Orn., vol. ii. pl. 91.

Schoeniclus australis, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 105.

Schoeniclus australis, Gould, Birds of Australia, fol., vol. vi. pl. 30.

This pretty species of Sandpiper is distributed over all parts of Australia, including Tasmania. The sandy beaches of the sea-coast and the banks of the rivers in the interior of the country are equally visited by it; and in all such situations it is to be seen either in pairs or in small parties of from six to fifteen in number. It is very fearless, and will allow of the

nearest approach before it will take wing. In its economy it appeared to me to hold an intermediate station between the Sandpipers and true Snipes. It is a bird especially fond of the grassy sides of lagoons and open wet marshy places, where it trips over the herbage which rests on the surface of the water, and sometimes wades up to its body in search of insects. Its flight resembles that of the true Snipes. Of the specimens killed, by far the greater number were birds of the year, at which period of their existence a rufous tint pervades the breast and flanks; the feathers of the back are also margined with the same hue, except where they are varied with greenish white, some of the feathers of the scapularies and back being edged with this colour; when fully adult, an almost uniform grey pervades the upper surface, the centre of the abdomen alone being white.

I dissected a number of specimens and found the larger ones to be males, a somewhat unusual circumstance in this group of birds; the Ruff, however, may be quoted as an instance contrary to the usual law; several of the males were weighed, and averaged two ounces and three-quarters.

The food consists of aquatic insects and their larvæ.

All the feathers of the upper surface very dark brown in the centre, gradually fading into grey on the margins; crown slightly washed with rufous; primaries brown with white shafts; under surface white, washed on the breast with greyish brown, and where this tint appears, each feather has a small streak of brown down the centre; under tail-coverts with a conspicuous streak of dark brown down the centre; bill olive at the base, becoming dark brown at the tip; legs yellowish olive; irides black.

The above is the description of an adult in winter plumage; the young of the year are similarly marked, but have the greater portion of the feathers, and particularly those of the crown and the tertiaries, distinctly margined with sandy red and white; the breast washed with buff.

Genus **ANCYLOCHILUS**, *Kaup*.

The single species of this genus inhabits Europe, America, India, and Australia.

Sp. 523. **ANCYLOCHILUS SUBARQUATUS.****CURLEW SANDPIPER.**

Scolopax subarquata, Gmel. Syst. Nat., vol. i. p. 658.

Tringa subarquata, Temm. Man. d'Orn., tom. ii. p. 609.

Pelidna subarquata, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 96.

Schœniclus subarquatus, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 105.

Ancylocheilus subarquatus, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Aout, 1856.

Pygmy Curlew of British Ornithologists.

Schœniclus subarquatus, Gould, **Birds of Australia**, fol., vol. vi. pl. 32.

Some species of Australian birds are precisely identical with those of India and Europe, and the present may be quoted as a case in point, for I find no difference between this bird and the Pygmy Curlew of England, except that Australian specimens are a little larger than those of Europe; its distribution over the shores of Australia appears to be universal, but at the same time it is very thinly dispersed; and there seem to be no localities in which it can be looked for and found with certainty at any stated time. Like the rest of the Sandpipers, it resorts to the shingly beach of the sea-shore and the banks of estuaries and rivers. The change from the grey to the red livery, which renders the birds so conspicuous in the summer season, takes place in Australia at precisely the opposite time of the year to that in which it occurs in Europe.

Of the three specimens in my collection, one was killed on Rottnest Island, another on the main-land of Western Australia, and the third at Port Macquarrie in New South Wales.

In summer the upper surface is deep rufous; wings dark greyish brown; upper tail-coverts white; tail grey, barred with black and rufous; head mottled black and white; all the under surface deep rufous; bill and legs black, slightly tinged with olive; irides dark brown.

In winter the rump is white, the remainder of the upper surface greyish brown; under surface white, except the chest, which is slightly tinged with grey.

Young birds differ from both in having the upper surface dark brown, each feather fringed with grey and a wash of brown across the chest.

Genus ACTODROMAS, *Kaup*.

The little Sandpipers of Europe, America, and Australia have been separated under the above generic appellation, with the *Tringa minuta* of authors as the type. One species inhabits Australia.

Sp. 524. ACTODROMAS AUSTRALIS.

LITTLE SANDPIPER.

Calidris australis, Cuv. Gal. de Paris.—Less. Traité d'Orn., p. 558.

Tringa albescens, Temm. Pl. Col., 41. fig. 2.

Land Snipe and *Least Sandpiper* of the Colonists of Western Australia.

Schoeniclus albescens, Gould, *Birds of Australia*, fol., vol. vi. pl. 31.

I have received specimens of this little Sandpiper from every one of the Australian colonies, the islands in Bass's Straits, the Houtmann's Abrolhos off the western coast, and Raine's Islet in Torres' Straits; no one, therefore, of the Australian Sandpipers is more generally dispersed. To those who are acquainted with the Little Dunlin (*Actodromas minutus*) of Europe. I may say that the habits of the two species so closely assimilate as to render a separate descrip-

tion unnecessary ; low flat shingly beaches fringing deep bays and inlets of the sea, salt estuaries and spits of land at the extremities of small islands, are its usual places of resort. In Tasmania I observed it in hundreds at Ralph Bay Neck and the adjoining estuary near the mouth of the Derwent ; and it was equally plentiful at Nepean Bay and other parts of the shores of Kangaroo Island, at the entrance of Spencer's Gulf in South Australia. Agile and elegant in its movements, it trips over the ground with astonishing celerity, following each receding tide in search of such small marine insects as form part of its diet. All the examples procured by myself were in the winter or light-coloured dress, and had I not recently received specimens from South Australia, which exhibit traces of red on the breast and dark feathers on the upper surface, I should have been led to suppose that it did not undergo the usual changes of the other members of the genus.

Gilbert found it breeding on the Houtmann's Abrolhos in December, its two eggs being deposited in a hollow, which it had formed in the ridge of black deposit and salt thrown up by the ripple of the water, and which, when the water receded, was left high and dry at about four or five yards from the water's edge. Gilbert also states that it assembles in large flocks on all the lakes around Perth and on Rottnest Island, that it utters a weak piping note when on the wing, that its stomach is muscular, and that its food consists of small land and aquatic insects and small mollusca. He further observes, that at Port Essington it congregates in flocks of several hundreds, and, like the Greenshank and other members of the group, perches on the mangroves during the height of the flood-tide.

In summer the crown of the head and upper surface is greyish brown, with a patch of blackish brown in the centre of each feather, deepening into rusty red on the margins of the scapularies, with a slight wash of rufous ; wing-coverts tipped with white ; primaries blackish brown with white shafts ;

rump, upper tail-coverts and two centre tail-feathers blackish brown ; tail pale brownish white with white shafts ; forehead and under surface white ; sides of the breast spotted with dark brown, and stained with rusty red in the centre ; irides brownish black ; bill blackish brown ; tarsi and feet olive-brown.

The winter plumage is similar, but much paler, and entirely destitute of the red markings ; the spottings of the sides of the breast are also much less extensive.

Genus TRINGA, *Linnæus*.

The Knot of Europe is the type of this genus, and with that species may be associated the *T. tenuirostris*, although it differs from it in the colouring of the summer plumage.

Sp. 525. TRINGA CANUTUS, *Linnæus*.

KNOT.

Tringa canutus, Linn. Syst. Nat., tom. i. p. 251.

—— *cinerea*, Gmel. edit. Linn. Syst. Nat., tom. i. p. 673.

—— *calidris*, Linn. Syst. Nat., tom. i. p. 252.

—— *nævia*, Gmel. edit. Linn. Syst. Nat., tom. i. p. 681.

—— *grisea*, Gmel. Ib., p. 681.

—— *ferruginea*, Meyer. Taschenb. Deut., tom. ii. p. 395.

—— *islandica*, Gmel. edit. Linn. Syst. Nat., tom. i. p. 682.

Calidris canutus, Gould, Birds of Eur., vol. iv. pl. 324.

Of this well-known British bird I have undoubted examples from Moreton Bay, whence they were sent by Strange. The fact of its being found in Australia need not surprise us when we take into consideration its great wing-powers, and how widely it is distributed throughout Europe and North America. Curiously enough, however, it is so seldom met with in India that it is regarded as one of the rarest of the birds of that country. One of the specimens sent by Strange had the under surface much suffused with red, with many new

black feathers among the grey ones on the back showing that the bird was changing into its summer livery at the commencement of the Australian spring ; for the date on the label of the specimen now before me clearly written by Strange is, "Female, Sept. 2, 1861 ; irides dark hazel." It will scarcely be necessary for me to give a description of this well-known species, as it may be found in every European work ; I would, however, direct attention to the fact of its having been found on the east coast of Australia, that some one may record hereafter if its visits are regular.

Sp. 526. **TRINGA TENUIROSTRIS.**

GREAT SANDPIPER.

Totanus tenuirostris, Horsf. Linn. Trans., vol. xiii. p. 192.

Schoeniclus magnus, Gould in Proc. of Zool. Soc., 1848, p. 39.

Tringa crassirostris, Temm. et Schleg. Faun. Jap., p. 107. pl. lxiv.

Schoeniclus magnus, Gould, Birds of Australia, fol., vol. vi. pl. 33.

This is one of the birds that I did not meet with during my sojourn in Australia ; there are, however, many specimens in this country ; one in the British Museum was obtained on the north coast of Australia ; and another, procured at Swan River, is in the possession of Lord Braybrooke, a nobleman much attached to natural history. It is one of the most singular species of the *Tringæ*, being in size fully equal to the Ruff.

Besides being found in Australia, this bird also inhabits China and Japan, and beautiful figures of it in its various stages of plumage will be found in the 'Fauna Japonica' as above quoted.

Crown of the head and the neck brownish grey, each feather with a stripe of brown down the centre ; back and wings brown, broadly margined with brownish grey ; primaries blackish brown ; rump white, each feather tipped with brown ; tail brownish grey ; feathers of the breast dark brown, with a

crescent of white at the extremity ; abdomen and under tail-coverts white ; flanks mottled with brown ; bill, feet and irides olive.

Total length $9\frac{1}{2}$ inches ; bill $1\frac{3}{4}$; wing 7 ; tail $2\frac{1}{4}$; tarsi $1\frac{3}{8}$.

Genus TEREKIA, *Bonaparte*.

Only one species of this form is known. The upward curvature of the bill renders it remarkably different from all other Sandpipers.

Sp. 527. TEREKIA CINEREA.

TEREK SANDPIPER.

Scolopax terek, Lath. Ind. Orn., vol. ii. p. 724.

—— *cinerea*, Gmel. Linn., vol. i. p. 657.

Limosa recurvirostra, Pall. Zool. Rosso-Asiat., vol. ii. p. 181.

Terek Avoset, Penn. Arct. Zool., vol. ii. p. 502.

—— *Snipe*, Lath. Gen. Syn., vol. v. p. 155.

Limosa terek, Temm. Man. d'Orn., tom. iv. p. 426.

Terek Godwit, Gould, Birds of Europe, vol. iv. pl. 307.

Totanus javanicus, Horsf. Linn. Trans., vol. xiii. p. 193.

—— *sumatranus*, Raff.

Fedoa terekensis, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 83.

Numenius cinereus, Vieill. Ency. Meth. Orn., part iii. p. 1157.

Limicula indiana, Vieill.

Terekia javanica, Bonap. List. of Eur. and Am. Birds, p. 52.

—— *cinerea*, G. R. Gray, List. of Gen. of Birds, 2nd edit. p. 88.

Xenus cinereus, Kaup.—G. R. Gray, List of Birds in Brit. Mus. Coll., p. 96.

Terekia cinerea, Gould, Birds of Australia, fol., vol. vi. pl. 34.

I killed a single example of this species on the river Mokai in New South Wales on the 12th of July 1839, and neither before nor since have I seen another Australian specimen ; the individual in question was very shy, and it was with difficulty that I got sufficiently near to shoot it. On

dissection it proved to be a male. It is a common bird in Java and Sumatra ; its range also extends to India, China and Europe, and probably to North Africa.

But little has been hitherto recorded respecting its habits : Temminck states that it occurs accidentally in Europe, lives in Russia, Siberia, the borders of the Caspian Sea, in Japan, Sumatra, and Borneo, and that specimens from the latter island compared with others taken in Normandy and in the environs of Paris do not present the slightest differences ; that it inhabits the borders of rivers, has a sonorous voice, and feeds on worms, insects and small-shelled mollusks.

The nest according to Pallas is formed of plants, and the eggs are four in number, of a pale olive-yellow marked with spots of reddish brown.

“ This neat-plumaged little Sandpiper,” says Mr. Jerdon, “ is not very abundant in the South of India, but is met with more frequently towards the north ; it frequents the shores of seas, back-waters, tanks, and rivers, in small flocks. In summer plumage its scapulars become black, edged with brown. It breeds in Northern Asia, laying four pale olive-yellow eggs, with brown spots. It is extensively distributed over Europe and Asia to Australia.”—*Birds of India*, vol. ii. part ii. p. 683.

Latham states that in the summer it is numerous in the neighbourhood of the Caspian Sea, particularly about the mouth of the River Terek, where it breeds, and that it is usually met with in flocks in the marshes, especially on the borders of the salt lakes.

Head, all the upper surface, wings and tail pale brown, with a fine line of a darker tint down the centre of each feather ; shoulders and primaries dark brown, with the shaft of the first quill white ; secondaries white ; base of the bill orange-brown, passing into blackish brown at the tip ; irides black ; legs brownish orange, the brown tint predominating on the joints.

Genus ACTITIS, *Illiger*.

At least two species of this form are known, one inhabiting America, the other the Old World.

Sp. 528. ACTITIS HYPOLEUCOS.

COMMON SANDPIPER.

Tringa minor, Ray, Syn., p. 108, A. 6.

—— *hypoleucos*, Linn. Syst. Nat., tom. i. p. 250.

—— *leucoptera*, Pall.

Actitis hypoleucos, Ill. Prod. Syst. Mamm. et Av., p. 262.

Totanus hypoleucos, Temm. Man. d'Orn., 2nd edit., tom. i. p. 657, et tom. iv. p. 419.

Tringoides hypoleucos, Gray, Cat. of Gen. and Subgen. of Birds in Brit. Mus., p. 117.

Actites hypoleucus, Blas. List of Birds of Eur. (Engl. Edit.), p. 18.

Actitis empusa, Gould in Proc. of Zool. Soc., part xv. p. 222.

Green Sandpiper, Colonists of Port Essington.

Actitis empusa, Gould, Birds of Australia, fol. vol. vi. pl. 35.

Although I have seen specimens of this bird from every colony, with the exception of that on the north coast, I am unable to say in which it is most plentiful, or in which it may be sought for at any given period with the certainty of finding it. I did not meet with it myself in any of my various wanderings, but Gilbert observed it both at Swan River and at Port Essington. When speaking of Swan River, he says, "I only saw this species once. When near the entrance of the Swan, I noticed it flitting from rock to rock, and every time it rested on its feet the tail was constantly moved up and down with a shaking motion." On referring to the Port Essington specimens, he remarks, "Although solitary in its habits, I have seen three or four together; they were mostly observed inhabiting the beds of mangroves, over the roots of which, just above the water, they were very actively engaged in searching for their food, the tail being in constant motion :

occasionally I saw solitary individuals on the margins of the lakes inland." Those persons resident in Australia who are conversant with our British birds will readily recognize the well-known Summer Snipe, a bird which appears to be almost universally distributed over the Old World.

Its food consists of aquatic insects and very small-shelled mollusks.

It will be seen that I formerly regarded this bird as distinct from the Common Sandpiper of Europe; but a more careful and minute comparison induces me now to believe that it is identical; and, if so, the species is an inhabitant of nearly every country of the world. It is very generally distributed over Africa from north to south; and specimens from China, Japan, and the Indian Islands are precisely like those killed in the British Islands.

In Europe this species makes its slight nest in a tuft of rushes bordering a stream, in which it deposits its four large pointed eggs.

The sexes are precisely alike in the colour of their plumage, and but little difference exists in their size; the young, on the contrary, which are met with in greater abundance than the adults, have the brown feathers of the upper surface barred or freckled with darker brown.

The adults have all the upper surface pale glossy or bronzy brown, each feather crossed with irregular bars of dark brown, bounded on either side by a narrow line of pale brown; base and tips of the secondaries white; primaries very slightly tipped with white; centre tail-feathers pale glossy or bronzy-brown, with a row of irregular-shaped spots of dark brown along the margins; lateral feathers white, crossed by irregular blended bars of dark and pale brown; under surface white, with the exception of the sides of the chest, and the shafts of the feathers of the front of the chest, which are pale brown.

Total length $6\frac{1}{4}$ inches; bill $1\frac{1}{8}$; wing $4\frac{1}{8}$; tail $2\frac{1}{4}$; tarsi 1.

Genus **GLOTTIS**, *Nilsson*.

The only species of this genus found in Australia appears to be identical with the *Glottis canescens* of the British Islands.

Sp. 529. **GLOTTIS GLOTTOÏDES.****GREENSHANK.**

Scolopax glottis, Linn. Syst. Nat., tom. i. p. 245.

—— *canescens*, Gmel. edit. Linn. Syst. Nat., tom. i. p. 668.

—— *grisea*, Briss.

—— *chloropus*, Nilss.

—— *totanus*, Pall.

—— *fistulans*, Bechst.

—— *natans*, Koch.

Totanus glottoïdes, Vig. in Proc. of Comm. Sci. and Corr. of Zool. Soc., part i. p. 173.

—— *vigorsi*, Gray.

Glottis canescens, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août 1856.

Glottis glottoides, Gould, Birds of Australia, fol., vol. vi. pl. 36.

This wandering species inhabits every country of the Old World from Europe and India to the most southern part of Australia. Although nowhere very abundant, it is so generally dispersed over Australia, that I have seen specimens from every settlement in that vast portion of the globe; but, although its distribution is so general, its presence is not, I believe, to be depended upon in any given locality; it is, in fact, a chance but not unfrequent visitor to all. A more elegant bird on the sands can scarcely be imagined, and it is as graceful in all its actions as it is in form, tripping over the beach with a lightness and ease peculiar to itself. It sometimes leaves the sea-side for estuaries and inland lakes; but these localities are not so favourable to its habits as sandy points and spits of land on the sea-shore, where it is fre-

quently seen in company with the Whimbrel, Curlew, and Oyster-catcher.

It is sometimes seen in small flocks, of from seven to ten in number, but more frequently in pairs.

Like many other members of the family to which it belongs, this bird is subject to considerable change in its plumage, being much darker and more blotched and spotted during the breeding-season than at any other.

Face, all the under surface, rump, and tail pure white; the sides of the breast streaked with dark brown, and the tail barred on the margins and freckled with dark blackish brown; crown of the head and back of the neck grey, streaked down the centre with dark brown; shoulders and primaries very dark brown, the outer quill with a pure white shaft; the remainder of the upper surface light brown, each feather margined with grey, with a streak of dark brown down the centre, and a series of oblong spots on the margins of the same hue; bill dark olive; irides black; feet and legs deep olive-green.

The sexes differ so little in colour that dissection must be resorted to, to distinguish one from the other.

The above is the description of the plumage of summer; in winter the colouring is similar, but much paler, and the dark spots almost obsolete.

Genus TOTANUS, *Bechstein*.

Of this genus one species is all that has yet been discovered in Australia, and this I regard as identical with the *Totanus stagnatilis* of Europe; and, if this view be correct, then the range of the species will extend from Asia to Australia; certain it is, that I have seen specimens, which are strictly identical with the European bird, from all the intermediate countries.

Sp. 530. TOTANUS STAGNATILIS.

MARSH SANDPIPER.

Totanus stagnatilis, Temm. Man. d'Orn., tom. iv. p. 414.

Totanus stagnatilis, Gould, Birds of Australia, fol., vol. vi. pl. 37.

I shot a specimen of this bird on the banks of the Lower Mokai on the 16th of December 1839: on comparing it with Indian and European specimens, I find the whole to be identical; the Australian bird is, however, somewhat lighter in colour. The individual above mentioned was feeding on the bank close to the water's edge: from its being the only one I had ever seen alive, I was more desirous of procuring it than of watching its actions, and, as no opportunity afterwards occurred of my so doing with other individuals, I am unable to give any particulars respecting them.

Lord Lilford, in his "Notes on Birds observed in the Ionian Islands, &c.," published in the 'Ibis' for 1860, says of this species:—"Abundant in March, April, and the early part of May, on the race-course of Corfu. Its habits closely resemble those of the Green Sandpiper (*T. ochropus*), but it is less shy, and not so clamorous. I have had excellent opportunities of observing closely the habits of this and many other allied species on the race-course, having sometimes seen within a few yards of the spot where I lay hidden *T. glottis*, *T. stagnatilis*, *T. glareola*, *T. ochropus*, *Himantopus melanopterus*, *Tringa minuta*, *Numenius phæopus*, and *Glareola pratincola*."

Face, fore-part of the neck, and all the under surface white; crown of the head and neck grey, streaked longitudinally with black; upper surface grey, each feather with a lighter margin; wings blackish brown; tail white, marked with diagonal bars of brown; forehead, rump, and all the under surface white; bill dark greenish olive, tipped with brown; legs sickly olive-yellow; irides blackish brown.

Genus GAMBETTA, *Kaup*.

As in the case of the preceding genus, *Totanus*, there is only one species in Australia; in size and structure it is very similar to the Redshank of the British Islands.

Sp. 531. GAMBETTA PULVERULENTUS.

GREY-RUMPED SANDPIPER.

Tringa glareola, Pall. (Bonaparte).

Totanus pulverulentus, Müll. Naturk. Verhand. Land- en Volkenk., p. 152.

— *griseopygius*, Gould in Proc. of Zool. Soc., 1848, p. 39.

Mul-woo-ing-a-nihg-e, Aborigines of Port Essington.

Totanus griseopygius, Gould, *Birds of Australia*, fol., vol. vi. pl. 38.

All the specimens I have seen of this bird were killed near the harbour of Port Essington, where it frequents the sandy beaches and rocks just above high-water mark; the salt-water lakes and swamps near the settlement also afford it a natural asylum, and there, at some seasons of the year, it may be seen in vast flocks in company with Stints and Plovers.

The stomach is very muscular, and the food consists of aquatic insects and their larvæ and small-shelled mollusks.

But little difference exists in the colouring of the sexes.

The head, all the upper surface, rump, and tail are greyish brown; primaries dark brown; line over the eye and all the under surface white, the neck, breast, and flanks strongly freckled with brown; irides reddish brown; bill blackish brown, except the base of the under mandible, which is scarlet; legs and feet hyacinth-red.

In winter the upper surface is of a much lighter hue, and the under surface is of a greyish white and destitute of the freckles of brown.

Total length $8\frac{3}{4}$ inches; bill $1\frac{3}{4}$; wing $6\frac{3}{4}$; tail $2\frac{7}{8}$; tarsi $1\frac{1}{4}$.

It will be seen that I formerly described this bird as *Totanus griseopygius* believing it to be undescribed, but I now find that it had been previously characterized in the work above quoted as *T. pulverulentus*, which specific appellation I therefore adopt.

Genus STREPSILAS, *Illiger*.

If any bird may be regarded as a cosmopolite, it is the Turnstone, for it is found in most of the countries of the Old and New World. Two or, at most, three species of this form are all that are known.

Sp. 532. STREPSILAS INTERPRES.

TURNSTONE.

Tringa interpres, Linn. Syst. Nat., tom. i. p. 248.

Strepsilas interpres, Leach in Cat. of Brit. Mus., p. 29.

—— *collaris*, Temm. Man. d'Orn., tom. ii. p. 553.

Strepsilas interpres, Gould, Birds of Australia, fol., vol. vi. pl. 39.

If any one bird be universally dispersed over the sea-shores of the globe it is the Turnstone, for there are few of which it is not an inhabitant. I find no differences whatever between Australian and European specimens, nor do examples from America present sufficient variation to warrant any other conclusion than that the whole are one and the same species.

I could never detect the breeding-place of the Turnstone in any one of the Australian colonies, and I must not fail to add, that in the southern parts of that continent and Tasmania examples in the adult livery are but seldom seen, while individuals in the immature dress are very abundant; on the contrary, most of the specimens from Raine's Islet and other parts of Torres' Straits are mature birds clothed in the full livery or breeding-plumage. In all probability the northern parts of Australia will hereafter prove to be the part of the

country in which it breeds, and that the young make an annual migration towards the south and disperse themselves over every part of the coasts of Southern Australia, the islands in Bass's Straits, and Tasmania, all of which, as well as the Houtmann's Abrolhos off the western coast, are visited by it.

The habits, manners, and economy of the bird in Australia do not differ from those it exhibits in Europe ; there, as here, it feeds on marine insects, as well as on small bivalve mollusca and crustacea.

The sexes, when fully adult, are alike, but the colours of the female are not so bright as those of the male ; the young, even when they have attained the size of the adult, differ considerably, being much darker in colour, and destitute of the white markings of the face, and the chestnut-red tints which add so much to the beauty of the old birds.

The adult has the forehead, eyebrows, an oval spot before each eye, the centre of the throat, ear-coverts, nape of the neck, lower part of the back, abdomen, and under tail-coverts white ; from eye to eye across the forehead a band of black, which dips downwards in the centre to the bill ; from the base of the lower mandible proceeds a mark of black, which passes upwards to the eye, dilates backwards towards the nape, covers the front of the chest, and bifurcates towards the insertion of the wing ; mantle and scapularies reddish brown irregularly varied with black ; rump black ; wings black, the basal part of the inner webs and the shafts of the primaries white ; secondaries broadly tipped with white, forming a conspicuous bar across the wings ; bill black ; irides black ; legs and feet rich orange, darkest on the joints.

The young has the whole of the upper surface and the breast mottled brown and black, the white mark on the throat much larger, and only a trace of the white markings of the face and nape.

Family SCOLOPACIDÆ.

There is no group of marsh birds more deserving a family name than the Snipes and Woodcocks, for they are very numerous in species and are divisible into many genera. In size they range from that of the well-known Woodcock to the equally familiar Jack Snipe, and are universally dispersed over the globe, being found in every country.

Genus GALLINAGO, *Leach*.

This genus was established for that section of the Snipes of which our common species (*Gallinago scolopacinus*) is a typical representative, and of which only one kind has yet been recorded as an inhabitant of Australia.

Sp. 533. GALLINAGO AUSTRALIS.

NEW HOLLAND SNIPE.

Scolopax australis, Lath. Ind. Orn., Supp. p. lxiv.

New Holland Snipe, Lath. Gen. Syn., Supp. vol. ii. p. 310.

Scolopax hardwickii, Gray, Zool. Misc., vol. i. p. 16.

Gallinago australis, List of Birds in Brit. Mus., part iii. p. 111.

O-lar'cg-a, Aborigines of Port Essington.

Scolopax australis, Gould, Birds of Australia, fol. vol. vi. pl. 40.

On comparing the Snipes killed at Port Essington with others obtained in Tasmania, some trivial differences are found to exist, and which it is necessary to point out, in order that future observers may be induced to ascertain if they be identical or if they constitute two distinct species; on a minute examination, the Port Essington bird is found to have a shorter tail, and the four lateral feathers narrower than in that from Tasmania; besides which, the tail of the former is composed of eighteen feathers in both sexes, while the specimens of the latter, contained in my collection, number but

the lateral feathers alternately barred with dark and lighter brown, and tipped with white ; irides dark brown ; basal half of the bill yellowish olive, the remainder dark brown ; legs yellowish tinged with olive.

Genus RHYNCHÆA, *Cuvier*.

The few species comprised in this genus are widely dispersed over the face of the globe ; one inhabits the southernmost parts of America, another South Africa, a third India, and a fourth Australia. They affect different situations from those resorted to by the true Snipes, usually selecting drier ground and knolls under low bushes contiguous to marshy lands, where they can readily procure their natural food.

Sp. 534. RHYNCHÆA AUSTRALIS, *Gould*.

AUSTRALIAN RHYNCHÆA.

Rhynchæa australis, Gould in Proc. of Zool. Soc., part v. p. 155.

***Rhynchæa australis*, Gould, Birds of Australia, fol., vol. vi. pl. 41.**

The Australian Rhynchæa is a summer visitant to New South Wales, where it arrives in August and September ; but whether its visits are regular, or only occur in such wet periods as fill the lagoons and cause a redundance of rushes and other herbage to spring forth, I know not ; in all probability they are influenced by the character of the season, as none but humid situations appear to suit its habits. During the fine season of 1839, when much rain had fallen and the whole face of the country was covered with the most luxuriant and varied verdure, and every hollow formed a shallow lagoon, this bird was tolerably plentiful in the district of the Upper Hunter, particularly in the flats of Segenho, Aberdeen, Scone, &c. Although I did not succeed in finding its nest, no doubt exists in my mind of its breeding in the immediate locality, as on dissecting a female an egg was found in the

ovarium, nearly of the full size, and ready to receive its calcareous covering. In its habits and disposition this bird neither lies so close, nor has the crouching manner of the true Snipes, but exposes itself to view like the Sandpipers, running about either among the rushes or on the bare ground at the edge of the water: on being disturbed, those I saw generally flew off towards the brush, seeking shelter among the low bushes; from which they were not easily driven or forced to take wing. Its flight is straighter, slower, more laboured, and nearer to the ground than that of the true Snipes. Considerable confusion has always existed respecting the members of the group to which this bird belongs, the opposite sexes of the same species having been described as distinct; from actual dissection, however, of numerous examples, and from seeing these birds mated in a state of nature, I am enabled to affirm that the figures in the plate of the folio edition above referred to are accurate representations of an adult male and female. This species will be found on comparison to possess, among other characters, much shorter toes than the Indian and Chinese species, to which it is most nearly allied. On dissection I also observed an anatomical peculiarity of a very extraordinary nature, the more so as it exists in the female alone; I allude to the great elongation of the trachea, which passes down between the skin and the muscles of the breast for the whole length of the body, making four distinct convolutions before entering the lungs. On discovering this extraordinary formation I placed a body in spirits, for the examination of my late friend Yarrell, who, as is well known, paid great attention to this part of the organization of birds, and who informed me that the position and form of the trachea in the *Rhynchæa australis* is similar to that of the Semipalmated Goose, figured in the 15th volume of the 'Trans. Linn. Soc.' tab. 14. The Cranes, Swans, Guans, &c., present us with species having the trachea most singularly developed, several of them with extensive convolutions before entering the lungs; some with

a receptacle for its folds within the cavity of the keel of the breast-bone; while in others it is situated outside the pectoral muscles, immediately beneath the outer skin of the breast; but in no instance is it more extensively or more curiously developed than in the present bird.

The use of this convoluted trachea, so exclusively confined to the female, I could not in any way discover or surmise. No note whatever was heard to proceed from either sex, while on the wing or when flushed.

“This beautiful bird,” says Captain Sturt, “was very scarce in the interior, and, indeed, is not common anywhere. Some three or four couples visit my residence at Grange yearly, and remain in the high reeds at the bottom of the creek, among which they doubtless breed, but we never found one of their nests. They lay basking in the shade of a tree on the sand-hills during the day, and separate when alarmed.”

The male is much smaller than the female, and has the sides, back, and front of the neck much lighter and mingled with patches of white; wings more olive, the coverts ornamented with numerous large irregular patches of buff, encircled with a narrow line of black; the buff bands on the primaries richer and more distinct; the scapularies speckled with white; the patch on each side of the chest dark olive, with large patches of white surrounded by a line of black.

Total length $8\frac{1}{2}$ inches; bill 2; wing $5\frac{1}{2}$; tail $2\frac{1}{2}$; tarsi $1\frac{1}{2}$.

The female has a stripe from the bill, down the centre of the head, to the nape pale buff; circle surrounding and a short stripe behind each eye white; back of the neck chestnut, crossed with indistinct narrow bars of greenish brown; crown dark brown; sides of the face and the sides and fore part of the neck chocolate; chin white; back olive-green, tinged with grey, and marbled with dark brown; scapularies blotched on their external webs with deep buff; wing-coverts olive-green, crossed by numerous fine irregular bars of black;

tertiaries olive-green, tinged with grey, crossed by irregular bars, and numerous sprinkled with black; three outer primaries dark brown, crossed on their outer webs with broad irregular patches of deep buff, and sprinkled with grey on the inner; the remainder of the primaries and the secondaries grey, crossed by numerous narrow irregular lines of black, and spotted with white surrounded with black; rump and tail grey like the secondaries, but spotted with both white and buff, each of which colours are bounded with black; breast and all the under surface white, with a large irregular patch of olive-green, narrowly barred with black, on each side of the chest; bill pale green at the base, passing into brownish horn-colour at the tip; irides rather dark hazel; legs pale green.

Family — ?

Genus NUMENIUS, *Latham*.

Three species of this form are found in Australia, and others inhabit Asia, Africa, and America. For the greater part of the year they frequent the flat shores of the ocean, but retire in spring to the upland districts of their respective countries to breed.

Sp. 535. NUMENIUS CYANOPUS, *Vieillot*.

AUSTRALIAN CURLEW.

Numenius cyanopus, Vieill. 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. viii. p. 306.

—— *rostratus*, Licht. (Bonap.).

—— *australis*, Gould in Proc. of Zool. Soc., part v. p. 155.

Wid'-joo-on'-ong, Aborigines of the Murray River, Western Australia.

Man'-do-weidt, Aborigines of Port Essington.

Curlew of the Colonists.

Numenius australis, Gould, *Birds of Australia*, fol., vol. vi. pl. 42.

In investigating the ornithology of any part of the world,

we find many instances of species so closely resembling others, known to be inhabitants of distant countries, that they at first sight appear to be identical, but on a more careful comparison and examination they prove to be distinct; in no case, however, is this law of representation, for such it must be called, so decidedly marked as in Australia, where not a few instances occur of birds closely resembling species found in other countries; and the present bird may be cited as a case in point, for a casual observer would at once pronounce it to be the Common Curlew of Europe; on comparison, however, it is found to differ from that species in having a longer bill, the rump and upper tail-coverts barred with brown instead of being of a uniform white, and the under surface washed with buff.

The range of this species over Australia appears to be universal, for I have received specimens from Port Essington, Swan River, South Australia, New South Wales, Tasmania, and all the islands in Bass's Straits; but in no one of these countries is it more abundant than in Tasmania, where it is to be met with in flocks in the neighbourhood of rivers and marshy situations; it is also especially fond of running over the flats left bare by the receding tide, to feed upon the various molluscous animals abounding in such situations.

The weight of this bird is about two pounds; the stomachs of those dissected were found to be extremely muscular, and contained the remains of shelled mollusks, crabs, &c.

The breeding-ground has not yet been discovered; the bird probably retires to the high lands of Tasmania or Australia Felix for that purpose.

A similarity of colouring pervades both sexes.

Crown of the head and back of the neck blackish brown, each feather margined with buff; back blackish brown, each feather irregularly blotched with reddish buff on the margins; wing-coverts blackish brown, margined with greyish white; tertiaries brown, irregularly blotched on the margins with

lighter brown; rump and upper tail-coverts dark brown, barred across the margins with greyish buff; tail light brown, crossed with bars of dark brown; greater coverts blackish brown, slightly tipped with white; first five primaries dark brown, with white stems, the remainder and the secondaries crossed by irregular interrupted bars of white; sides of the face, throat, and all the under surface pale buff, with a fine line of blackish brown down the centre of each feather; basal half of the bill flesh-colour, tinged with olive; apical portion deep blackish brown; legs bluish lead-colour; irides dark brown.

Sp. 536. **NUMENIUS UROPYGIALIS**, *Gould*.

AUSTRALIAN WHIMBREL.

Numenius uropygialis, Gould in Proc. of Zool. Soc., part viii. p. 175.
Mañ-do-weidt, Aborigines of Port Essington.

Numenius uropygialis, Gould, *Birds of Australia*, fol., vol. vi. pl. 43.

This species is somewhat smaller than the *Numenius phaeopus* of Europe, and moreover differs in having the rump barred and mottled instead of a pure white as in that bird; in other respects they are so similar that a description of one would apply with nearly equal accuracy to the other; the Australian bird is, however, of a paler brown than its European ally.

It is distributed over the whole of the continent of Australia and the island of Tasmania, wherever localities occur suitable to its habits, which are so precisely similar to those of the *Numenius phaeopus*, that a description of them is quite unnecessary.

It is generally met with in large flocks in swampy districts on the banks of rivers and all similar situations; I killed several specimens on the Hunter, in New South Wales, but could never succeed in discovering its eggs, whence I infer

that for the purposes of incubation it betakes itself to the interior of the country.

The sexes are so precisely alike, that by dissection alone can we distinguish the one from the other.

Crown of the head brown, with a narrow irregular stripe of buffy white down the centre; lores and line behind the eye brown; line over the eye, neck, and breast buffy white, with a brown line down the centre of each feather, the brown colour predominating; centre of the back and scapulary feathers dark olive, spotted on their margins with light buff; wing-coverts the same, but lighter, and presenting a mottled appearance; primaries blackish brown, with light shafts; rump and upper tail-coverts barred with brown and white; tail pale brown, barred with dark brown; chin, lower part of the abdomen, and under tail-coverts white; bill blackish horn-colour, fleshy at the base; feet greyish black.

Total length 15 inches; bill 3; wing $9\frac{1}{2}$; tail 3; tarsi $2\frac{1}{4}$.

Sp. 537. NUMENIUS MINOR, *Müller*.

LITTLE WHIMBREL.

Numenius minor, Müll. Naturk. Verhand. Land- en Volkenkunde, p. 110.

—— *minutus*, Gould in Proc. of Zool. Soc., part viii. p. 176.

Numenius minutus, Gould, Birds of Australia, fol., vol. vi. pl. 44.

I killed a pair of this species out of a flock of about twenty in number which was flying over the race-course at Maitland, in New South Wales, on the 4th of April 1839. The flock was constantly rising and flying round, sometimes to the distance of a mile, returning again, alighting, and running quickly over the ground much after the manner of the Plovers. The above was the only instance in which the bird came under my observation during my stay in the country, consequently I am unable to state anything respecting its habits or the

extent of its range, but I may mention that I have seen a specimen from Port Essington.

Forehead dark brown, mottled with buff; lores and line behind the eye buff; back, sides, and front of the neck buff, with a fine line of brown down the centre of each feather; all the upper surface blackish brown, with a series of triangular spots round the margins of the feathers of a sandy buff; shoulders, primaries, and secondaries blackish brown, the latter with white shafts; rump and tail-coverts dark brown, spotted with white on the margins; tail greyish brown, barred with black; chin white; under surface light buff; flanks and under surface of the wing deep buff, regularly barred with arrow-shaped marks of brown; irides black; bill fleshy at the base, olive-brown at the tip; feet bluish flesh-colour.

Total length 12 inches; bill $1\frac{3}{4}$; wing 7; tail 3; tarsi $1\frac{3}{4}$.

Family TANTALIDÆ.

Among other genera, *Tantalus*, *Carphibis*, *Threskiornis*, *Falcinellus*, *Platalea*, and *Platibis* have been assigned to the above family. By far the greater number of the species of each of those genera, as well as others which it is not necessary to enumerate, are denizens of the Old World.

The three Australian Ibises pertain, as will be hereafter seen, to as many genera.

The first or Straw-necked Ibis of the colonists—a very singular form, which stands alone—to *Carphibis*; the second, which has its representative in other countries, particularly in Egypt (where it has lived from time immemorial, since it is the species that was embalmed by the ancient Egyptians), to *Threskiornis*; and the third, a widely spread species found in Australia, India, Africa, and Europe, and occasionally in the British Islands, to *Falcinellus*.

Genus **CARPHIBIS**, *Reichenbach*.

Of this form the single species known is confined to Australia, and must ever rank among the most beautiful and remarkable members of its family.

Sp. 538. **CARPHIBIS SPINICOLLIS.**

STRAW-NECKED IBIS.

New Holland Ibis, Lath. Gen. Hist. of Birds, vol. ix. p. 167.

Ibis spinicollis, Jameson, Edinb. New Phil. Journ., No. xxxvii. p. 213.

—— *lathamii*, Gray.

—— *lamellicollis*, LaFres. Mag. de Zool., 1836, liv. 4^{me} et 5^{me}, pl. 57.

Geronticus spinicollis, G. R. Gray, Gen. of Birds, vol. iii. p. 566;

Geronticus, sp. 3.

***Geronticus spinicollis*, Gould, Birds of Australia, fol., vol. vi. pl. 45.**

This beautiful Ibis has not I believe been discovered out of Australia, over the whole of which immense country it is probably distributed; its presence, however, in any particular locality appears to depend upon whether the season be or be not favourable to increase of the lower animals upon which the vast hordes of this bird feed. After the severe drought of 1839 it was in such abundance on the Liverpool Plains, and on those of the Lower Namoi, that to compute the number in a single flock was impossible. It was also very numerous on the sea side of the great Liverpool range, inhabiting the open down and flats, particularly such as were studded with shallow lagoons, through which it would wade knee-high in search of shelled mollusks, frogs, newts and insects: independently of the food I have mentioned, it feeds on grasshoppers and insects generally. The natives informed me that sometimes many seasons elapse without the bird being seen.

The Straw-necked Ibis walks over the surface of the ground in a very stately manner; it perches readily on trees, and its flight is both singular and striking, particularly when large flocks are passing over the plains, at one moment showing their white breasts, and at the next, by a change in their po-

sition, exhibiting their dark-coloured backs and snow-white tails. During the large semicircular sweeps they take over the plains, and when performing a long flight, they rise tolerably high in the air ; the whole flock then arrange themselves in the form of a figure or letter similar to that so frequently observed in flights of geese and ducks.

The note is a loud, hoarse, croaking sound, which may be heard at a considerable distance. When feeding in flocks they are closely packed, and from the movement of their bills and tails, the whole mass seems in constant motion. In disposition this bird is rather shy than otherwise ; still, with a very little care, successful shots may be made with an ordinary fowling-piece.

The sexes when fully adult exhibit the same beautiful metallic colouring of the plumage. The female is, however, smaller, and has the straw-like appendages on the neck less prolonged and less stout than the male. Mature birds only have the whole of the head and back of the neck destitute of feathers.

Head and forepart of the neck naked, and of a dull inky black ; back and sides of the neck clothed with white down ; on the front of the neck and breast the shafts of the feathers are produced into long lanceolate straw-like and straw-coloured processes, with merely a rudiment of the lateral webs at the base ; sides and back of the neck, breast and all the upper surface rich shining bronzy green and purple, crossed particularly on the wing-coverts, scapularies, and outer webs of the secondaries with numerous bars of dull black ; primaries and inner webs of the secondaries dull greenish black ; abdomen, flanks, under tail-coverts and tail white ; bill dull black, crossed at the base by irregular transverse bars of yellowish brown ; irides dark brown ; thighs crimson ; legs blackish brown, the two colours blending on the knee.

Immature birds have the head and neck clothed with white down, the straw-like appendages less in number, and less of the rich colouring on the breast.

Genus THRESKIORNIS, G. R. Gray.

The well-known Sacred Ibis of Egypt is the type of this genus, of which there are several species, all inhabiting the Old World.

Sp. 539. THRESKIORNIS STRICTIPENNIS.

WHITE IBIS.

Ibis strictipennis, Gould in Proc. of Zool. Soc., part v. p. 106.

Yam-bull^{ll}-bull, Aborigines of Port Essington.

Black-necked Ibis, Colonists of Port Essington.

White Ibis of the Colonists of New South Wales.

Threskiornis strictipennis, Gould, *Birds of Australia*, fol., vol. vi. pl. 46.

The same cause that induced the Straw-necked Ibis (*Carphibis spinicollis*) to visit New South Wales in such abundance during the year 1839 acted equally on the present bird, which was not only observed at the same period, but the two species were frequently seen in company; one marked difference, however, was noticed, namely, that while the *Carphibis spinicollis* visited equally the lagoons and the plains, the *Threskiornis strictipennis* confined itself solely to the wet hollows of flats, the banks of rivers, lagoons, &c., wading knee-deep among the rushes and green herbage in search of frogs, newts, and insects, upon which it feeds; when satiated it mounted upon the bare branches of the large gum-trees bordering the feeding-place, and then became so watchful that it could not be approached within gun-shot without the utmost caution. The natives as well as the colonists assured me that it was seldom so abundant as at the period of my visit, and I believe that many seasons sometimes elapse without its appearing there at all. I encountered this bird either in pairs or in small flocks of from five to twenty in number, but it was never a hundredth part so plentiful as the *Carphibis spinicollis*.

Like that bird it must retire to some unknown part of Australia, doubtless towards the interior, a single skin from the north coast being all that I have ever seen from any other part of the country.

The *Threskiornis strictipennis* may at all times be distinguished from its near ally *T. æthiopica*, inhabiting the banks of the Nile, as well as from the *T. melanocephala*, by the lengthened plumes which hang down from the front of the neck, and from which its specific appellation has been taken.

Head and upper half of the neck bare, and with the bill of a deep slaty black; back of the head and neck crossed by ten narrow distinct bands of rose-pink, and on the crown of the head a series of oval spots, arranged in the form of a star, of the same colour; the whole of the body and wings white, tinged with buff; the feathers on the fore part of the neck long, narrow, lanceolate and stiff; primaries tipped with deep bluish green; webs of the tertiaries extremely prolonged and recurved, and of a deep blue-black mingled with white; thighs and knees deep purple; tarsi and feet light purple; irides dark brown.

Total length 30 inches; bill 6; wing $14\frac{1}{2}$; tail 6; tarsi 4.

I have observed considerable difference in the transverse rose-pink markings at the back of the neck; in some specimens these are very conspicuous, while in others they are scarcely apparent.

The sexes, when fully adult, present but little difference in the style or colouring of their plumage; but the female may be distinguished by her smaller size. The young, on the other hand, for the first and perhaps the second year of their existence, have that part of the neck which is bare in the adult partially clothed with white feathers like the rest of the body.

Genus FALCINELLUS, *Bechstein*.

The type of this form is the Common Ibis of the British Islands, a species which is widely spread over Africa, India, and Australia.

Sp. 540. **FALCINELLUS IGNEUS.**

GLOSSY IBIS.

Tantalus falcinellus, Linn. Syst. Nat., vol. i. p. 241.

Ibis falcinellus, Flem. Brit. Anim., p. 102.

Tantalus igneus, Gmel. Edit. Linn. Syst. Nat., vol. i. p. 649.

Falcinellus igneus, G. R. Gray, Gen. of Birds, 2nd edit., p. 87.

Phlegadius falcinellus, Kaup.

Falcinellus igneus, Gould, Birds of Australia, fol., vol. vi. pl. 47.

The present species is one of the few birds inhabiting both hemispheres ; it has also been found in every part of the vast continent of Australia at present known to us. I observed examples in the collection formed by Bynoe on the north coast, and I have seen others obtained in New South Wales and South Australia. A careful comparison of all these specimens with others killed in Europe has satisfied me that they are identical. I never observed it in a state of nature myself, and from what I could learn from the colonists, its presence must be regarded as accidental ; it is not a stationary species, nor are its migratory movements characterized by any degree of regularity.

Head dark chestnut ; neck, breast, top of the back, upper edge of the wing and all the under surface rich reddish chestnut ; lower part of the back, rump, quill- and tail-feathers of a dark green, with bronze and purple reflexions ; orbits olive-green ; irides brown ; bill, legs and feet dull olive-brown.

When this bird has attained the age of two or three years, little or no difference is perceptible in the outward appearance of the sexes.

Genus PLATALEA, *Linnaeus*.

Widely distributed indeed are the members of this strikingly peculiar form ; besides inhabiting most of the countries of the Old World, Spoonbills also occur in North and South America. Only one species of the genus as now restricted is found in Australia.

Sp. 541. PLATALEA REGIA, *Gould*.

ROYAL SPOONBILL.

Platalea regia, Gould in Proc. of Zool. Soc., part v. p. 106.

Platalea regia, Gould, *Birds of Australia*, fol., vol. vi. pl. 50.

This fine species may be readily distinguished from the *Platalea leucorodia* of Europe by the nudity of its face, which even considerably beyond the eyes is entirely destitute of feathers, and is of the same black colour as the bill ; in other respects—size and colouring of the plumage—little difference exists between the two species. The fine crest which adorns the head is, doubtless, only assumed during the pairing and breeding season, as I have seen adult specimens both with and without these feathers, and this is precisely the case with the European bird.

The Royal Spoonbill is tolerably common on the eastern and northern coast of Australia, and I have been informed that, although a rare visitant there, it has been killed within the colony of New South Wales. All my specimens were procured at Moreton Bay, and I have seen others from Port Essington. In its habits and disposition it as closely assimilates to its European prototype as it does in general appearance, for, like that bird, it takes up its abode on the margin of those marshy inlets of the sea that run for a considerable distance into the interior, and on the banks of rivers and lakes, and feeds upon small-shelled mollusks, frogs, insects and the

fry of fish, which are readily taken by its beautifully organized bill.

But little difference exists in the outward appearance of the sexes, both having the ornamental crest, which at the will of the bird is spread out on all sides, and droops gracefully over the back of the neck.

The whole of the plumage is white ; bill, face, legs, and feet black ; on the crown of the head and over each eye a triangular mark of orange ; eye red.

Total length 29 inches ; bill $8\frac{1}{2}$; wing 15 ; tail $5\frac{1}{2}$; tarsi $5\frac{1}{2}$.

Genus PLATIBIS, *Bonaparte*.

In my original account of the following species I mentioned that it differed in many points from the typical members of the genus *Platalea*, and had many characters in common with the white Ibises of India and Africa, but did not venture to make it the type of a new genus ; this, however, has since been done by Bonaparte, and his name is here adopted.

Sp. 542. PLATIBIS FLAVIPES, *Gould*.

YELLOW-LEGGED SPOONBILL.

Platalea flavipes, Gould in Proc. of Zool. Soc., part v. p. 106.

Platibis flavipes, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii.

Séance du 2 Août, 1856.

Platalea flavipes, Gould, *Birds of Australia*, fol., vol. vi. pl. 49.

The rainy and luxuriant season which followed the drought experienced in New South Wales in 1839 attracted to that part of Australia, among many other rare birds, numerous flocks of the present species ; in fact, so plentiful was it, that there was scarcely a brook or lagoon from the Hunter to the Lower Naomi that was not tenanted by numbers of this bird ; in most instances accompanied by Straw-necked and White Ibises (*Carphibis spinicollis* and *Threskiornis strictipennis*).

The food suitable to one species was equally so to the other, all devouring with equal avidity the thousands of aquatic insects, small-shelled mollusks, &c., which the rains had apparently called into being.

I particularly mention its occurrence at this period, as I had not observed a single example during a previous visit to the same districts, when the whole face of the country presented as sad a spectacle of sterility as could well be imagined.

Over what extent of Australia this interesting bird will be found to range it is impossible to conjecture; as yet I have never received a specimen from any other part than New South Wales. In disposition I found it shy and distrustful, and it was not without a considerable degree of caution and manœuvring that I could ever approach sufficiently near to make successful shots. I occasionally met with it singly, but more frequently in pairs or in small companies of from six to eight. When not occupied in procuring food, which it does while skirting the edge of the lagoon, or by wading knee-deep among the grasses and rushes, it may be seen reposing on the dead branches of the highest trees growing near the water, frequently standing on one leg, with the head drawn back and the bill resting on the breast; when thus situated an approach sufficiently near to procure specimens is almost impossible.

The sexes exhibit no external differences and are only to be distinguished by dissection; the female is, however, rather smaller than the male.

The whole of the plumage is pure white, with the exception of the outer webs of the tertiaries, which are black; face white, entirely devoid of feathers, and bounded posteriorly by a narrow line of black: bill primrose-yellow, passing into fleshy pink at the base; irides straw-white; legs and feet yellow; nails black.

Total length 28 inches; bill $7\frac{1}{4}$; wing $14\frac{1}{2}$; tail $5\frac{1}{2}$; tarsi $4\frac{3}{4}$.

Family GRUIDÆ.

In America the Cranes are confined to the northern portion of that continent, but in the Old World they are much more widely dispersed, being found throughout Africa and Asia, and one extends to Australia; still they are not very numerous in species, about fifteen being all that are known.

Genus GRUS, *Linnæus*.

The Australian member of this genus is, as far as I am aware, confined to that country; in India it is beautifully represented by the *Grus antigone*, and in Europe by the *G. cinerea*.

Sp. 543. GRUS AUSTRALASIANUS, *Gould*.

AUSTRALIAN CRANE.

Native Companion of the Colonists.

Grus australasianus, Gould, *Birds of Australia*, fol., vol. vi. pl. 48.

The *Grus australasianus* is abundantly distributed over the greater portion of Australia from New South Wales on the south to Port Essington on the north; but although it is thus widely diffused, it has not yet been observed in the colony of Swan River, and it does not inhabit Tasmania. It was frequently observed by Leichardt during his overland expedition from Moreton Bay; Captain Sturt states that it was very abundant on the Macquarrie; and I found it numerous in the neighbourhood of the Namoi and on the Brezi Plains in December 1839, as well as on the low flat islands at the mouth of the Hunter. In these localities it might then have been seen at almost every season of the year, sometimes singly or in pairs, and at others in flocks of from thirty to forty in number.

Like other members of the genus *Grus*, it is stately and

elegant in all its movements, and its presence adds greatly to the interest of the scenery. It is not unfrequently captured, and is very easily tamed: when at Paramatta I saw a remarkably fine example walking about the streets in the midst of the inhabitants perfectly at its ease; and Mr. James M'Arthur informed me that a pair which he had kept in the immediate neighbourhood of his house at Camden, and which had become perfectly domesticated, so far attracted the notice of a pair of wild birds as to induce them to settle and feed near the house, and becoming still tamer, to approach the yard, feed from his hand, and even to follow the domesticated birds into the kitchen, until unfortunately a servant imprudently seizing at one of the wild birds and tearing a handful of feathers from its back, the wildness of its disposition was roused, and darting forth followed by its companion it mounted in the air soaring higher and higher at every circle, at the same time uttering its hoarse call, which was responded to by the tame birds below; for several days did they return and perform the same evolutions without alighting, until the dormant impulses of the tame birds being aroused they also winged their way to some far distant part of the country, and never returned to the home where they had been so long fostered.

When near the ground the action of the wings is very laboured; but when soaring in a series of circles at such a height in the air as to be almost imperceptible to human vision, it appears to be altogether as easy and graceful; it is while performing these gyrations that it frequently utters its hoarse croaking cry.

It breeds on the ground, usually depositing its two eggs in a slight depression on the bare plains; but occasionally the low swampy lands in the vicinity of the coast are resorted to for that purpose. The eggs are three inches and a half long by two inches and a quarter in breadth, and are of a cream-colour blotched all over, particularly at the larger end, with

chestnut and purplish brown, the latter colour appearing as if beneath the surface of the shell.

Its food consists of insects, lizards, bulbous roots and various other vegetable substances, in search of which it tears up the earth with great facility with its powerful bill.

The sexes are alike in colouring, but may be distinguished by the smaller size of the female.

The general plumage deep silvery grey ; the feathers of the back dark brownish grey with silvery-grey edges ; lesser wing-coverts dark brown ; primaries black ; crown of the head and bill olive-green, the bill becoming lighter towards the tip ; irides fine orange-yellow ; raised fleshy papillæ surrounding the ears and the back of the head fine coral-red, passing into an orange tint above and below the eye, and becoming less brilliant on the sides of the face, which together with the gular pouch is covered with fine black hairs, so closely set on the latter as almost to conceal the red colouring of the skin : upper part of the pouch and the bare skin beneath the lower mandible olive-green ; in old males the gular pouch is very pendulous, and forms a conspicuous appendage ; legs and feet purplish black.

Total length 48 inches ; bill $6\frac{1}{4}$; wing 24 ; tail $9\frac{1}{2}$; tarsi $10\frac{1}{2}$.

Family CICONIDÆ.

Species of this family inhabit Europe, Asia, Africa, and America. Generally speaking, they are large and powerful birds, and in most countries migratory. Like the Cranes, they are rather limited in the number of species, about twelve being all that are known. Most of these are migratory, and one of them at least—the Common Stork of Europe—periodically performs very extensive journeys ; and the inhabitants of Holland can calculate almost to a day when the bird will arrive there in spring.

Genus **XENORHYNCHUS**, *Bonaparte*.

This noble species is, I believe, identical with the bird of the same form inhabiting India; and if such be the case, it enjoys a wide range of habitat.

Sp. 544. **XENORHYNCHUS AUSTRALIS.****AUSTRALIAN JABIRU.**

Mycteria australis, Lath. Ind. Orn., Supp. p. lxiv.

New Holland Jabiru, Lath. Gen. Syn. Supp., vol. ii. p. 294, pl. 138.

Ciconia leucoptera, Wagl. Syst. Av., *Ciconia*, sp. 6.

— *australis*, Temm. Linn. Trans., vol. v. p. 34.

Xenorhynchus australis, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août, 1856.

Barri-enna, Aborigines of New South Wales.

***Mycteria australis*, Gould, Birds of Australia, fol., vol. vi. pl. 51.**

I regret that I did not meet with this fine bird in a state of nature, but I learnt that it possesses a wide range over the continent of Australia; and that it is more abundant on the northern and eastern shores than elsewhere: when the country was first colonized it was found as near to Sydney as Botany Bay, and even now is sometimes seen on the small islands in the mouth of the river Hunter; as we proceed eastward to Moreton Bay it becomes more common, and in the neighbourhood of the Clarence and MacLeay it may be almost daily seen: both Gilbert and Macgillivray met with it at Port Essington; the former also observed it in the lagoons of the interior, while in company with Dr. Leichardt; and that it does inhabit the extreme western part of Australia is proved by Mr. Gregory having sent me the head and legs of a specimen which he killed on the Gascoyne River, and who informed me that "only two examples of this singular bird were seen; both near Breaker Inlet. It lives in the muddy creeks, and is very difficult of approach. It flies exceedingly

slow, with its head, neck, and legs extended horizontally to their utmost length, which measure six feet one inch, its breadth across the wings being seven feet two inches; it weighs eleven pounds. The colour of its skin and flesh is of a rich salmon tint; the flavour of the latter has a fishy flavour, too over-powerful to admit of its being eaten by any one but a hungry explorer." This species probably ranges throughout Java and Sumatra to central India, where it is occasionally found. No bird is more shy in disposition or more difficult of approach, its feeding-ground and resting-place being always in the most exposed situation, such as spits of land running out into the sea, large morasses, &c., where it can survey all around.

Its food is said to be very varied, consisting of every kind of animal life inhabiting marshy situations, but more particularly fish and reptiles.

Head and neck rich deep glossy green, changing into purple and violet at the occiput; greater wing-coverts both above and beneath, scapularies, lower part of the back, and tail rich glossy green, tinged with a golden lustre; the remainder of the plumage pure white; bill black; irides dark hazel; legs fine red.

Family ARDEIDÆ.

The members of this family range over every part of the globe. Those inhabiting Australia include examples of many genera, among them *Ardea*, *Herodias*, *Nycticorax*, *Botaurus*, *Ardetta*, &c. They differ very considerably in size, and not less so in habits and economy, some being extremely shy and retiring, while others, such as the typical *Ardeæ*, affect open and exposed situations. Their chief food is reptiles, to which small quadrupeds, young water-birds, and insects are added.

Genus ARDEA, *Linnæus*.

Members of this genus are found in America, Asia, Africa, and Australia.

Sp. 545. ARDEA CINEREA, *Linn*.

COMMON HERON.

Ardea cinerea, Linn. Syst. Nat., tom. i. p. 236.

—— *leucophæa*, Gould in Proc. of Zool. Soc., 1848, p. 58.

Ardea leucophæa, Gould, Birds of Australia, fol., vol. vi. pl. 55.

During my journey into the interior of South Australia in 1839, I saw a fine adult example of this bird, but although I resorted to every possible stratagem in my power to get within shot of it, I regret to say I was unsuccessful; I have since, however, received a skin direct from New South Wales.

Mr. Blyth considers that this Heron is not specifically distinct from the *Ardea cinerea* of India and Europe; and if this be really the case, the species enjoys a very extensive range over the whole world, including Africa.

Forehead and upper portion of the crest white; sides of the head and lower portion of the crest deep glossy black; neck white, washed with vinous, and with a series of lanceolate marks of black disposed alternately down the front; all the upper surface, wings, and tail dark grey, the lanceolate feathers of the back fading into white; edge of the wings buffy white; primaries and secondaries dark slate-colour; flanks and under surface of the wing grey; chest and abdomen white, separated from the grey of the flanks by a series of black feathers; under tail-coverts and thighs white; bill yellow; tarsi olive.

The young differs in having the whole of the crown of the head black; all the upper surface greyish brown; and the under surface striated with brown and white.

Sp. 546. ARDEA SUMATRANA, *Raffles*.

GREAT-BILLED HERON.

Ardea sumatrana, Raffle. Linn. Trans. vol. xiii. p. 325.

—— *typhon*, Temm. Pl. Col., 475.

—— *fusca*, Blyth, Ann. Nat. Hist., 1844, p. 176.

—— *insignis*, Hodgs.

—— *rectirostris*, Gould in Proc. of Zool. Soc., part xi. p. 22.

Typhon rectirostris, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii.
séance du 2 Août 1856.

Oo-loo-muñg-a, Aborigines of Port Essington, Gilbert.

Mäitch, Aborigines of Port Essington, Macgillivray.

Ardea rectirostris, Gould, *Birds of Australia*, fol., vol. vi. pl. 54.

The only part of Australia in which this bird has been seen is the Cobourg Peninsula on the north coast, where Gilbert found it breeding on the 5th of February. He states that it is solitary in its habits, and is only to be found in the most secluded creeks or in the open spaces among the mangroves. Mr. McGillivray also observed it at Port Essington, but could not obtain any information respecting it. A fine adult specimen was procured by Dr. Sibbald, R.N., and Mr. Macgillivray was so fortunate as to kill a young bird in a large mangrove swamp at the head of a bay called Wān-măn-mēma: it was exceedingly shy and watchful of his motions, and he had great difficulty in getting even a long shot at it.

The nest observed by Gilbert was built in an upright fork of a large and lofty *Melaleuca* at about eighty feet from the ground, and was formed of an outer layer of very strong sticks, with a few small twigs as a lining, and contained two eggs of a light ash-grey.

The bird when discovered appeared very reluctant to leave the nest, and instead of the harsh croak usually uttered by it, emitted on this occasion a note drawn out to a considerable length, and at times resembling distant thunder, which was

suddenly changed to a sound very like the groan of a person in extreme agony.

Head, neck, and all the upper surface vinous brown, a few of the back feathers with a faint line of white down the centre, and the primaries and tail washed with grey; chin white; front of the neck and all the under surface greyish brown, the lengthened plumes on the lower part of the neck and chest with a stripe of white down the centre; irides yellow; bill blackish brown; basal half of the lower mandible yellowish white, apical half yellow; legs and feet dark greenish grey; hinder part of the tarsi and inside of the feet yellowish grey.

Total length 37 inches; bill 7; wing $16\frac{1}{2}$; tail 7; tarsi $6\frac{1}{2}$.

Sp. 547. ARDEA PACIFICA, *Lath.*

PACIFIC HERON.

Ardea pacifica, Lath. Ind. Orn., Supp. p. lxxv.

Pacific Heron, Lath. Gen. Syn. Supp., vol. ii. p. 305.

Ardea ballaragang, Wagl. Syst. Av., gen. *Ardea*, sp. 5.

Jil-lee-mil-yun, Aborigines of the lowland, and

Koon-jere, Aborigines of the mountain districts of Western Australia.

White-necked Heron of the Colonists.

Ardea pacifica, Gould, Birds of Australia, fol., vol. vi. pl. 52.

The *Ardea pacifica* appears to be a summer visitor to the whole of the southern coast of Australia. In New South Wales its occurrence depends in a great degree upon the nature of the season; if much rain has fallen, the lagoons and rivers become filled, and abound with frogs, newts, and aquatic insects: its presence may be looked for in all such situations, where it wades about in search of the animals enumerated, upon all of which it feeds with avidity, and partakes less of fish than other Herons. No one of the *Ardeidæ* is more ornamental to the landscape than the present bird, its white neck offering a decided and pleasing contrast

to the green colouring of the herbage with which it is surrounded: its walk, too, is characterized by a greater degree of stateliness and grace than that of most of the other members of the group.

In general it merely flies from district to district in search of a more abundant supply of food; but, when necessity requires, it is capable of performing extensive journeys.

That it breeds in the southern portion of Australia there can be but little doubt; the brevity of my stay in the country did not, however, admit of my finding its nest or of obtaining its eggs, which latter, when discovered, will probably prove to be of a light blue in colour, and somewhat smaller in size than those of *Ardea cinerea*.

Considerable variation exists in the colouring of this species, some specimens having the neck wholly white, while others have the centre of that part spotted with black.

The sexes when fully adult are so nearly alike, that it is only by the smaller size of the female that they can be distinguished from each other.

Head, neck, and elongated feathers of the breast white, tinged with purplish grey; on the fore part of the neck a series of irregularly-placed black spots; upper surface, wings, and tail bluish black, glossed with green on the back and wing-coverts; under surface chocolate-brown, each feather of the abdomen with a broad stripe of white down the centre; feathers of the breast and the elongated scapularies deep purplish red, the tips and outer webs of some of the latter dull green; shoulder and edge of the wing pure white; upper mandible black, lower part of the under mandible yellowish olive in some specimens and yellowish horn-colour in others; irides in some specimens rich primrose-yellow, and in others very dark brown; upper part of the tarsi yellowish olive; feet black; orbits greenish yellow, becoming more yellow immediately before and round the eye.

Sp. 548. ARDEA NOVÆ-HOLLANDIÆ, *Lath.*

WHITE-FRONTED HERON.

Ardea novæ-hollandiæ, *Lath. Ind. Orn.*, vol. ii. p. 701.

White-fronted Heron, *Lath. Gen. Syn. Supp.*, vol. ii. p. 304.

Ardea leucops, *Wagl. Syst. Av.*, *Ardea*, sp. 17.

Herodias novæ-hollandiæ, *List of Birds in Brit. Mus. Coll.*, part iii. p. 80.

Wy-an, Aborigines of the lowland districts of Western Australia.

Blue Crane of the Colonists.

Ardea novæ-hollandiæ, *Gould, Birds of Australia*, fol., vol. vi. pl. 53.

The White-fronted Heron is abundantly dispersed over every part of Tasmania, the colonies of New South Wales, South Australia, and Swan River; but I have never seen it from the north coast, and consequently infer that it is not found there. Low sandy beaches washed by the open ocean, arms of the sea, and the sides of rivers and lagoons, both in the interior of the country as well as near the coast, are equally tenanted by it; consequently it is one of the commonest species of the genus in all the countries above mentioned, and may frequently be seen wading knee-deep in the water of the salt-marshes in search of food, which consists of crabs, fish, and marine insects. Its flight is heavy and flapping like that of the other Herons, but it runs more quickly over the ground, and is continually moving about when searching for food, and never stands motionless in the water as the true Herons do; these active habits are, in fact, necessary to enable it to capture insects and crabs, upon which it mainly subsists.

Some nests I observed in the month of October 1838, on the banks of the Derwent, were placed on the tops of the smaller gum-trees, and most of them contained newly hatched birds; Mr. Kermode informed me that it annually breeds in the neighbourhood of his estate, near the centre of Tasmania. The nest is of a moderate size, and is composed of sticks and leaves. The eggs are four in number, of a pale

bluish green, one inch and seven-eighths long by one inch and a quarter broad.

The stomach is very capacious, and the weight of the adult bird about one pound five ounces.

Little or no difference is observable in the sexes; but the female is somewhat smaller than the male.

Face and throat white; crown of the head and back of the neck dark slate-colour; sides of the neck, all the upper surface, and wings dark grey, tinged with brown on the wings; primaries and tail-feathers dark slate-colour; elongated feathers of the back grey, tinged with brown; elongated feathers of the breast cinnamon-brown; under surface grey, washed with rufous, which tint becomes gradually paler as it proceeds along the abdomen to the under tail-coverts; down the lower part of the neck a stripe of buff, gradually blending above with the white of the throat, and below with the cinnamon tint of the breast; irides in some lead-colour, in others yellow, and in others pale buff; orbits and base of the bill, in some pale grey, in others deep lead-colour; base of the lower mandible flesh-colour.

The white colouring of the face and throat is much more extensive in some individuals than in others; and the base of the bill, the orbits, and irides are deep lead-colour in some specimens, while in others those parts are pale grey, and the irides pale buff.

A further subdivision of the Herons will doubtless be hereafter instituted, when this and the foregoing species will be placed under one generic title. They differ from the true *Ardeæ* in their more slender form, and in the somewhat downward curvature of the mandibles; they also vary from them in their colouring.

Genus HERODIAS, *Boie*.

Nearly every part of the globe is tenanted by species of this genus. Most of those inhabiting Australia are identical with species found in India.

Sp. 549. HERODIAS ALBA.

AUSTRALIAN EGRET.

Ardea alba, Linn. Syst. Nat., tom. i. p. 239.

—— *candida*, Briss. Orn., tom. v. p. 428.

—— *modesta*, Gray, Zool. Misc., p. 19.

Egretta alba, Bonap. Compt. Rend. de l'Acad. Sci., tom. xl. séance du 2 Avril 1855.

Herodias syrmatorphorus, Gould, Birds of Australia, fol., vol. vi. pl. 56.

This noble species of Egret, the largest of the group inhabiting Australia, is sparingly dispersed over all parts of that continent, and is usually met with along the rivers and lagoons of the interior as well as in the neighbourhood of the coast. I have occasionally seen it near the mouth of the Hunter, but more frequently on the banks of the Clarence and other rivers little frequented by civilized man. I also observed it in Tasmania, in the vicinity of George's River, and the other unfrequented streams to the northward of the island. Mr. Gregory remarks that this species is "only found on the banks of rivers and inlets, and in no instance did we see more than one at a time. It flies very slowly, and in form much resembles the Common Crane. The specimen sent is from the mouth of the De Grey." The example from which my description was taken was killed, on the 2nd of January 1840, on the banks of the Mokai. It is of an extremely shy and distrustful disposition, and can only be approached within range by the exercise of the utmost care and caution. Its powers of wing

are considerable, and, like other Herons, it occasionally performs long-continued flights at a great height in the air; its food is also of a similar character, consisting of fish, frogs, aquatic insects, &c. When on the ground its snowy plumage presents a strong and pleasing contrast to the green sedge and other herbage clothing the banks of the rivers.

That it undergoes seasonal changes of plumage is evident, since I possess specimens, some of which are adorned with long ornamental plumes on the back, while in others they are entirely wanting, from which I infer that, as they all appear to be old birds, they have been killed at different periods of the year, and that these ornamental plumes are only carried during the months of spring and the breeding-season.

The sexes are precisely alike in external appearance, and both possess the lengthened plumes during the vernal season.

The whole of the plumage pure white; irides rich straw-yellow; naked space before and behind the eye fine greenish yellow; bill beautiful orange; legs above the knee pale dull yellow, which colour is continued down the centre of the inner part of the tarsi; remainder of the tarsi and feet black.

Mr. Blyth says that the "*Herodias syrmatophorus*, Gould, from Australia and New Zealand, does not differ (that I can perceive) from *H. modesta*, Gray (Hardwicke, 'Ill. Ind. Zool.'), of Asia and Africa, which is very common in India; and I have seen no specimens referred to *H. alba*, Linn., which were in any respect different."—*Ibis*, 1865, p. 36.

If this view be correct, and it really would appear to be so, the Great White Heron is universally dispersed over the Old World; and few, if any, of the Egrets are more ornamental or delicate in appearance than this species.

Sp. 550. HERODIAS EGRETTOIDES.

PLUMED EGRET.

Ardea intermedia, Wagl. Isis, 1829, p. 659.

—— *flavirostris*, Bonnat. et Vieill. Ency. Méth. Orn., part iii. p. 1124.

—— *nigrirostris*, Gray, Zool. Misc., p. 19.

Egretta egrettoides, Bonap. Compt. Rend. de l'Acad. Sci., tom. xl. séance du 2 Avril 1855.

Herodias plumiferus, Gould in Proc. of Zool. Soc., part xv. p. 221.

Herodias plumiferus, Gould, Birds of Australia, fol., vol. vi. pl. 57.

No one of the members of the beautiful genus *Herodias* is more interesting than the present species, inasmuch as it is not only adorned with the redundancy of graceful plumes springing from the back, common to the other species, but it has a mass of feathers of precisely the same structure depending from the lower part of the neck and the chest. In size it is directly intermediate between *H. alba* and *H. melanopus*. I possess a specimen from the Namoi, in the southern part of Australia, and another from the north coast; and I have also a third from Torres Straits, which proves that its range is very extensive; the latter example is destitute of the lengthened plumes, which are probably only assumed during the breeding-season.

The entire plumage is pure white; bill and orbits yellow; feet and lower part of the tarsi black; upper part of the tarsi inclining to flesh-colour.

Total length 24 inches; bill 4; wing 11; tail $4\frac{1}{4}$; tarsi $4\frac{1}{4}$.

In the folio edition this bird is figured under the name of *H. plumiferus*; but ornithologists generally consider that the specific term *egrettoides* of Bonaparte is the one which properly pertains to it, and hence the adoption of that name.

From my remarks on the wide distribution of some of the preceding species, we are led to infer that these Water-Herons are great wanderers. They are generally solitary birds, except in the breeding-season, when they congregate in great numbers.

Sp. 551. HERODIAS MELANOPUS.

SPOTLESS EGRET.

Ardea melanopus, Wagl. Isis., 1829, p. 660.

Garzetta immaculata, Bonap. Compt. Rend. de l'Acad. Sci., tom. xl.
séance du 2 Avril 1855.

Yab-be-ruk, Aborigines of Port Essington.

White Crane of the Colonists.

***Herodias immaculata*, Gould, Birds of Australia, fol., vol. vi. pl. 58.**

This Spotless Egret is a native of the northern portion of Australia, and is extremely abundant in almost all parts of the Coburg Peninsula, both on the open sea-beach and in the secluded parts of the harbour; it also occurs in all the neighbouring swamps and lakes. "On one occasion," says Gilbert, "while lying at anchor in Van Diemen's Gulf, about half a mile from an isolated rock, covered with a stunted plant growing from the crevices, I saw these birds repairing thither for the purpose of roosting in such numbers, that in a very short time the dark-coloured rock assumed an appearance of snowy whiteness, resembling in the distance, and particularly by moonlight, a pile of snow; at the same time I observed them in different parts of the harbour congregated in flocks, and when seen perched upon the branches overhanging the water, they greatly resembled a flock of Cockatoos; but although they are met with in such numbers, it is by no means easy to procure specimens, for a more shy and wary bird is scarcely to be found."

The sexes are alike externally, and both are adorned with the long flowing plumes during summer.

The entire plumage of a pure and snowy whiteness; irides yellow; upper mandible, half the lower mandible, and apical dark purplish black; base of the latter dull yellowish grey; cere and orbits saffron-yellow; legs blackish grey; inner side and back of the tarsi, and the under surface of the feet siskin-green.

Sp. 552. HERODIAS GARZETTA.

LITTLE EGRET.

Ardea garzetta, Linn. Syst. Nat., vol. i. p. 987.

—— *orientalis*, Gray, Zool. Misc., p. 20.

Mr. Coxen, of Queensland, has sent me a photograph of a little white Egret which had been killed in the neighbourhood of Brisbane. The lithograph shows two lengthened, narrow, white, pendant plumes, springing from the occiput, like those seen in the *Herodias garzetta* of India and Europe, and I have not the slightest doubt that the Australian bird is identical with that species; thus another member of the *Ardeidæ* is added to the avifauna of Australia.

Sp. 553. HERODIAS ASHA.

SOMBRE EGRET.

Ardea asha, Sykes, Proc. of Comm. of Sci. and Corr. of Zool. Soc., part xi. p. 157.

Herodias pannosus, Gould in Proc. of Zool. Soc., part xv. p. 221.

—— *asha*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xl. séance du 2 Avril, 1855.

Demiegretta asha, Jerd. Birds of India, vol. ii. part ii. p. 747.

Herodias pannosus, Gould, Birds of Australia, fol., vol. vi. pl. 59.

The only example of this species that has come under my observation is the fine adult specimen I received from the neighbourhood of Port Stephens in 1843. Unfortunately I am not able to give any information respecting it, as no note of any kind accompanied the specimen. Its dark colouring and very slender and elegant form distinguish it from every other species of the group to which it belongs.

The entire plumage is bluish or slaty black, with the exception of the chin, which is pure white.

Total length 24 inches; bill $4\frac{1}{4}$; wing $10\frac{1}{2}$; tail 4; tarsi $4\frac{1}{4}$.

Sp. 554. HERODIAS PICATA, *Gould*.

PIED EGRET.

Ardea (Herodias) picata, Gould in Proc. of Zool. Soc., part xiii. p. 62.
Go-le-buk-o, Aborigines of Port Essington.

Herodias picata, Gould, *Birds of Australia*, fol., vol. vi. pl. 62.

Examples of this species, not the least beautiful member of the tribe to which it belongs, have been sent to me by Gilbert and by Commander Ince; they were all procured in the neighbourhood of Port Essington, where Gilbert states that it inhabits the inland swamps, and is usually encountered in small families often in company with other species, but is not so abundant in the vicinity of the harbour as on the islands at the head of Van Diemen's Gulf, where it appeared to be very numerous.

The stomachs of those dissected were found to be capacious and membranous, and the food to consist of fish, aquatic insects and their larvæ.

I regret to say that nothing more is at present known respecting it.

Upper part of the head, occiput, occipital plumes, the whole of the plumage of the body, wings, and tail bluish slaty black; chin, neck, chest, and some of the lanceolate feathers dependent therefrom, white; some few of the lanceolate feathers on the neck and breast have one web white and the other web bluish slaty black; the remainder of these lanceolate feathers are the same colour as the body; irides yellow; bill, legs, and feet greenish yellow.

The young birds differ in having the whole of the under surface white.

Total length 17 inches; bill $3\frac{1}{4}$; wing 10; tail $3\frac{1}{2}$; tarsi $3\frac{1}{4}$.

Genus DEMIEGRETTA, *Blyth*.

Mr. Blyth has proposed this term for the Reef Herons, and according to Mr. G. R. Gray's list of genera *D. jugularis* is the type. They are widely distributed over the shores of the southern parts of the Old World, and according to Dr. Baird three species of the same form are found in North America.

Sp. 555. DEMIEGRETTA JUGULARIS.

BLUE REEF HERON.

Ardea jugularis, Forst. Icon. Ined., t. cxiv.

—— *cærulea*, var. Lath. Gen. Hist., vol. ix. p. 117.

—— *matook*, Vieill. 2de Edit. du Nouv. Dict. d'Hist. Nat., tom. xiv. p. 416.

Herodias jugularis, List of Birds in Brit. Mus. Coll., part iii. p. 80.

Blue Crane, Colonists of Port Essington.

Herodias jugularis, Gould, Birds of Australia, fol., vol. vi. pl. 60.

The Blue Reef Heron is universally distributed over the whole of the coasts of the great continent of Australia, and is also found in New Zealand: the sea-coast is evidently the place destined by nature for this bird to inhabit; it especially loves to dwell on shores of a rocky nature; and when disturbed merely takes short flights to seaward, and returns again to some prominent point, whence it can survey all around and feel itself in security. Its food appears to consist of crabs and shelled mollusks; the stomachs of those dissected were very muscular, and contained the remains of both those kinds of animals; hence the necessity for the powerful bill and peculiar structure of feet with which this bird is provided.

"This species," says Mr. Macgillivray, "inhabits the islands of the north-east coast of Australia and Torres' Straits, and is abundantly distributed from the Capricorn group in lat. 23° 30' S., as far north as Darnley Island in lat. 9° 35' S. It procures its food at low water on the coral reef surrounding

the low wooded islands it loves to frequent; although generally a wary bird even when little disturbed by man, yet on one occasion on Heron Island I knocked down several with a stick. The nest is usually placed on a tree, but on those islands where there are none, such as Raine's Islet and elsewhere, it breeds among the recesses of the rocks; where the trees are tall, as on Oomāga or Keat's Island, the nests are placed near the summit; on Dugong Island they were placed on the root of a tree, on a low stump, or halfway up a low bushy tree; they are shallow in form, eighteen inches in diameter, and constructed of small sticks and lined with twigs; the eggs are two in number, and of a pale bluish white, one inch and seven-eighths long by one inch and a quarter broad." Strange says, "I procured specimens about ten miles north of Sydney Heads; it appears to be strictly confined to the rocky cliffs and ledges of rocks, where it takes great delight in allowing the spray to beat over it. It is very shy and wary, and never stops long in one place." In his notes from Port Essington, Gilbert states that "it is abundant on all the small islands and rocks immediately adjacent to the mainland. It is gregarious in its habits the whole year round, for I remarked that it was congregated in as large numbers before as after the breeding-season, which is the month of August. The nest is built of sticks on the ground, and is perfectly round and from twelve to eighteen inches in height, with a considerable depression for the reception of the eggs; they are always placed in thickets or under-wood, and as near the outer edge of the rock as possible. On one small rock I found at least fifty of these nests, some of which were so close as nearly to touch each other. The eggs were sometimes two, and at others three in number."

The sexes are so similar that dissection must be resorted to to distinguish the one from the other.

It will be observed that these statements are contradictory in some particulars, which may perhaps be accounted for by

the habits of the bird being modified by circumstances, or the peculiar nature of the situations in which they happened to be observed.

Down the centre of the chin a line of buff in some, white in others; the whole of the remainder of the plumage dark slaty black, with a wash of grey on the lengthened scapularies, and the lanceolate feathers pendent from the chest; bill pale dirty yellowish green; lores dull oil-green; tarsi and tibiæ pale or apple-green; soles of the feet dirty yellow.

Some ornithologists believe that this and the succeeding species are identical and the latter merely a white variety, but I must refer my readers to what Mr. Macgillivray says on this head in my account of *H. greyi*, and I think they will then agree with me in keeping them distinct. I certainly have never seen a white variety on the southern coasts of Australia.

Sp. 556. DEMIEGRETTA GREYI.

WHITE REEF-HERON.

Herodias Greyi, Gray, List of Birds in Brit. Mus. Coll., part iii. p. 80.

Herodias greyi, Gould, Birds of Australia, fol., vol. vi. pl. 61.

This species of Heron is abundantly dispersed over the northern and eastern coasts of Australia wherever low islands and reefs of coral running parallel to those coasts occur. It presents so many points of similarity in size and in form to the *D. jugularis*, that I have long been of opinion that it is merely an albino variety of that species, an opinion which I find has been entertained by others. Mr. Macgillivray, however, states that they are distinct, and to him I am indebted for the following observations:—

“From the circumstance of my having always found this and the dark-coloured species” (*D. jugularis*) “in company, I considered them as the same bird in different states of plumage, their size and proportions being so similar, and was

surprised that individuals exhibiting a change from blue to white or *vice versá* never occurred. At length, while on Dugong Island, I was convinced they were specifically distinct by seeing that the half-grown young from the nest had assumed the distinctive colour of the parents. This was first pointed out to me by Dr. Muirhead, R.N., whose attention I had previously drawn to the subject. The habits of both species are similar; and they procure their food in the same manner at low water on the coral reefs surrounding the low islands they frequent. The nest and eggs are precisely similar, but the young of this bird is white from the nest."

The entire plumage snow-white; bill yellowish straw-colour, with a dusky tinge on the culmen and towards the point; irides primrose-yellow; eyelids bright yellow; lores and orbits dull greenish; legs and feet yellowish green; soles orange; claws pale horn-colour, hind one dark; anterior plates of the toes bluish black.

Genus NYCTICORAX, *Stephens*.

Europe, Africa, and America are all inhabited by Night Herons; consequently they constitute one of the most widely distributed sections of the family. They are nocturnal in their habits, and approximate to the members of the genus *Botaurus*, particularly in the laxity of their neck-plumes. The sexes do not differ from each other in their colouring, but the young are rendered remarkable during the first year of their existence by their plumage being conspicuously blotched and spotted all over.

The single Australian species cannot by any possibility be confounded with either of those inhabiting any other part of the world, the cinnamon colour of its back rendering it conspicuously different from all of them.

Sp. 557. NYCTICORAX CALEDONICUS.

NANKEEN NIGHT HERON.

Ardea caledonica, Lath. Ind. Orn., vol. ii. p. 679.

Caledonian Night Heron, Lath. Gen. Syn., vol. v. p. 55.

Nycticorax caledonicus, Less. Traité d'Orn., p. 571.

Ardea sparmannii, Wagl. Syst. Av., sp. 32.

New Holland Night Heron, Lath. Gen. Hist., vol. ix. p. 62, young.

Gnal-gah-ning, Aborigines of the lowland districts of Western Australia.

Al-úr-woon, Aborigines of Port Essington.

Quaker and *Nankeen-bird* of the Colonists.

Nycticorax caledonicus, Gould, Birds of Australia, fol., vol. vi. pl. 63.

This richly coloured species is universally dispersed over the continent of Australia, but is far less abundant on the western coast than elsewhere. Mr. Macgillivray procured it at Cape York, where it is called *Yonko* by the natives. In the southern latitudes it is only a summer visitant, arriving in New South Wales and South Australia in August and September, and retiring again in February. As its name implies, it is nocturnal in its habits, and from its frequenting swamps, the sedgy banks of rivers, and other secluded situations, it is seldom seen. On the approach of morning it retires to the forests and perches among the branches of large trees, where, shrouded from the heat of the sun, it sleeps the whole day, and when once discovered is easily shot, for if forced to quit its perch it merely flies a short distance and again alights. Its flight is slow and flapping, and during its passage through the air the head is drawn back between the shoulders and the legs are stretched out backwards after the manner of the true Herons. When perched on the trees or resting on the ground, it exhibits none of the grace and elegance of those birds, its short neck resting on the shoulders. When impelled to search for a supply of food it naturally becomes more animated,

and its actions lively and prying; the varied nature of its food in fact demands some degree of activity, fishes, water-lizards, crabs, frogs, leeches, and insects being all partaken of with equal avidity.

It breeds in the months of November and December, and generally in companies like the true Herons, the favourite localities being the neighbourhood of swampy districts, where an abundant supply of food is to be procured; the branches of large trees, points of shelving rocks, and caverns are equally chosen as a site for the nest, which is rather large and flat, and generally composed of crooked sticks loosely interwoven. The eggs, which are usually three in number, are of a pale green colour, and average two inches and five-eighths in length by one inch and a half in breadth.

So little difference exists in the colouring of the sexes, that it is extremely difficult to distinguish the male from the female, and never with certainty. unless dissection be resorted to; both have the three beautiful elongated occipital plumes, the use of which except for ornament is not easily imagined. The young, on the contrary, differ so greatly from the adult, that they might readily be regarded as a distinct species.

The adult has the crown of the head and the nape black; occipital plumes white; back of the neck, all the upper surface, wings and tail rich cinnamon-brown; stripe over the eye, sides of the face, neck, and all the under surface pure white, the white and cinnamon gradually blending on the sides of the neck; bare space surrounding the eye greenish yellow; irides orange; bill in some specimens black, slightly tipped with yellow, in others black with a streak of greenish yellow along the lower mandible, and a wash of the same hue along the lower edge of the upper one; legs and feet jonquil-yellow; claws black.

The young bird of the first year has the whole of the upper surface striated with buff and blackish brown, narrow and lanceolate on the head and neck, broad and conspicuous on

the back and wings ; primaries and tail-feathers dark chestnut-red, deepening into black near the extremity and tipped with buffy white ; all the under surface buffy white, with a stripe of brown down the centre of each feather ; irides yellow.

Genus BOTAURUS, *Stephens*.

Members of this genus are found in most parts of both the Old and New Worlds, and they inhabit many of the islands as well as the mainlands. The Bitterns are birds of the night, for it is then that they skulk about the marshes and sides of rivers for their peculiar food, such as frogs, snails, water-voles, and insects. In the daytime they sleep among the reeds, whence they are not easily roused.

Sp. 558. BOTAURUS POICILOPTILUS.

AUSTRALIAN BITTERN.

Ardea poiciloptila, Wagl. Syst. Av., Note to *Ardea*, sp. 28.

Botaurus australis, Cuv. Gal. de Paris.—Less. Traité d'Orn. p. 572.

—— *melanotus*, G. R. Gray, App. to Dieffenb. Trav. in New Zeal., vol. ii. p. 196.

—— *pœciloptila*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août, 1856.

Bur'-den-etsh, Aborigines of the lowlands of Western Australia.

Botaurus australis, Gould, Birds of Australia, fol., vol. vi. pl. 64.

The Australian Bittern, although nowhere very abundant, is so generally diffused over the surface of the country wherever marshes and the sedgy banks of rivers occur, that there are few localities of this description in which its presence may not be detected : owing to the frequent occurrence of such districts in Tasmania, it is perhaps more numerous in that island than elsewhere. A fine specimen, which had been captured on the Torrens, was sent to me during my stay in Adelaide by Mr. Dark, the Surveyor ; I killed another myself

on the 1st of July 1839, above Gleeson's Station, while journeying towards the Murray, and I subsequently procured others at Illawarra: Captain Sturt mentions that he found it abundant in the marshes of the interior, in the neighbourhood of the river Macquarrie, and Gilbert procured it in Western Australia; and according to Mr. G. R. Gray his *Botaurus melanotus* of New Zealand is referable to this species.

In its actions, habits, manners and mode of flight it closely resembles the *Botaurus stellaris* of Europe; like that bird also it feeds on fish, frogs, newts, aquatic animals of all kinds, and insects, and has a capacious and membranous stomach.

The sexes are alike in plumage, but the female is smaller than the male.

Head and back of the neck purplish brown: back and scapularies dark purplish brown; wings buff, conspicuously and largely freckled with brown; ear-coverts tawny; throat and all the under surface deep tawny buff, with irregular markings of deep brown down the centre, giving the whole a mottled appearance; the brown colour however prevails on the lower part of the throat; bill yellowish olive in some, greenish horn-colour in others; space round the eyes and the legs beautiful pale green; irides in some yellow, lilac-red in others.

Genus BUTOROIDES, *Blyth*.

The members of this genus of Mangrove Bitterns usually frequent the extensive belts of mangroves and low dells covered with reed-beds and dense herbage.

Africa and America are each inhabited by birds of this form, one species of which is also found in India and the adjacent islands, and three in Australia. No marked differences are observable between the sexes in birds of the same age.

Sp. 559. BUTOROIDES FLAVICOLLIS.

YELLOW-NECKED MANGROVE-BITTERN.

Ardea flavicollis, Lath. Ind. Orn., vol. ii. p. 701.

—— *nigra*, Vieill. 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. xiv. p. 417.

Yellow-necked Heron, Lath. Gen. Syn., Supp. p. 239.

Ardetta flavicollis, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 84.

—— *gouldi*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii., séance du 2 Août, 1856.

Wôr-gorl, Aborigines of Port Essington.

Little Brown Bittern of the Colonists.

Ardetta flavicollis, Gould, Birds of Australia, fol., vol. vi. pl. 65.

I have received examples of this beautiful species from New South Wales, Swan River and Port Essington; others were also obtained by Sir George Grey on the north-west coast.

The Yellow-necked Bittern is exclusively an inhabitant of the mangroves, from which it is not easily driven, for it readily eludes pursuit by the facility with which it runs over the mud beneath their roots for a long time and distance, and it must be very closely followed up before it can be forced to take wing.

Eggs were taken on the 6th of January, in a nest formed of small sticks resting on a slender horizontal branch of a mangrove; they were two in number, and of a very much paler bluish green and more rounded form than those of any other species of the group, being one inch and a half long by one inch and an eighth broad.

The male has the crown of the head, back of the neck and all the upper surface bronzy black; primaries and tail bluish slate-colour; chin whitish; throat deep buff, the feathers down the centre of the chin and throat having their inner webs pale buff and their tips blackish brown, giving the whole a

richly variegated appearance; elongated feathers of the breast pale brown, narrowly margined with buff; under surface greyish brown, stained with buff; irides yellow; bill dark horn-colour; feet olive-brown.

The female differs in having the colours of the throat less brilliant and contrasted, and the upper surface of a lighter brown than that of the male.

The late Prince Charles Lucian Bonaparte was of opinion that this bird was distinct from the Indian species to which the specific name of *flavicollis* was originally applied, and under this impression named after myself; if it should prove to be different, then the bird must bear the name the Prince assigned to it.

Sp. 560. BUTOROIDES MACRORHYNCHA, *Gould*.

THICK-BILLED MANGROVE-BITTERN.

Ardetta macrorhyncha, Gould in Proc. of Zool. Soc., 1848, p. 39.

Butorides macrorhyncha, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août, 1856.

Ardetta macrorhyncha, Gould, *Birds of Australia*, fol., vol. vi. pl. 66.

The more robust bill, larger head and greater size of this species will at all times distinguish it from *Butoroides javanica*. The only part of Australia from which it has yet been received is the east coast. I myself observed two individuals sitting close to their flat nest on the branch of a mangrove growing on Garden Island near the mouth of the Hunter. It inhabits the mangrove swamps, and assumes all the habits and actions of the *A. javanica*, and like that species feeds upon the crabs and other crustaceans which there abound.

Crown of the head and occipital crest black, with green reflexions; neck, all the upper surface, and wing-coverts greenish olive; wing-coverts narrowly margined with deep rufous; primaries and tail slate-grey; spurious wing, second-

aries, and all but the three or four external primaries with an irregular triangular-shaped spot at the tip; down the centre of the throat a series of oblong marks of dark brown and white; forming a conspicuous mottled stripe continued on to the breast, where it is lost in the mingled grey and buffy brown of the abdomen; upper mandible dark reddish brown; basal portion of the lower one oil-green; tibiæ and hinder part of the tarsi bright yellow; remainder of the legs and feet yellowish brown.

Total length 17 inches; bill $3\frac{3}{4}$; wing $7\frac{3}{4}$; tail 3; tarsi $2\frac{1}{8}$.

Sp. 561. BUTOROIDES JAVANICA.

LITTLE MANGROVE-BITTERN.

Ardea javanica, Horsf. Linn. Trans., vol. xiii. p. 190.

Butorides javanica, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août 1856.

Ardetta stagnatilis, Gould in Proc. of Zool. Soc., part xv. p. 221.

Wot-gorl, Aborigines of Port Essington.

Little Grey Bittern of the Colonists.

Ardetta stagnatilis, Gould, *Birds of Australia*, fol., vol. vi. pl. 67.

This bird is tolerably abundant at Port Essington and other parts of the north coast of Australia, where its favourite haunts are small islets covered with mangroves and low swampy points of land running out into the sea; its chief place of resort, however, is the dense beds of mangroves, beneath the shade of which it runs about in search of food, of which there is a great variety, such as fish, crustaceans, and numerous marine worms and insects: when the tide rises and the muddy beds and roots of the mangroves are covered with water, the bird betakes itself to the higher branches, where it sits motionless until the tide retires and leaves behind a fresh supply of food.

Although generally speaking it is a solitary species, yet at times it congregates in considerable numbers. Gilbert found

a colony breeding on two small islets in Coral Bay, near the entrance of the harbour of Port Essington. Their nests, about thirty in number, were built both on the mangroves and on the branches of the yellow-blossomed *Hibiscus*; they were very frail structures, consisting of a few small twigs placed across each other on the horizontal branches, and none of them were more than six feet from the ground; each contained either two young birds or two eggs of a uniform very pale green, one inch and five-eighths long by one inch and a quarter broad.

Crown of the head, occipital crest, and a small tuft beneath each eye black; neck and all the under surface grey, with a vinous tinge, which becomes much deeper on the abdomen and under tail-coverts; lengthened feathers of the back bluish grey with lighter shafts; wing-coverts dark slate-grey, narrowly margined with buff and white; remainder of the wings and tail dark grey; irides light yellow; orbits and eyelash gamboge-yellow; upper mandible and cutting edge of the lower mandible very dark reddish brown; remainder of the lower mandible oil-green; tibiae and hinder part of the tarsi bright yellow; remainder of the legs and feet yellowish brown.

Total length 14 inches; bill $3\frac{1}{4}$; wing $7\frac{1}{2}$; tail $2\frac{3}{4}$; tarsi $2\frac{1}{4}$.

The young differ in having all the upper surface brown, with a triangular spot of white at the tip of all the wing-feathers, and the throat broadly and conspicuously striated with brown on a white ground.

Mr. Jerdon states that the *B. javanica* is found throughout the greater part of India, and that it extends to Burmah and Malayana; if then the bird to which I have assigned the name of *B. stagnatilis* should ultimately prove to be identical with the Indian bird, the species will enjoy a most extensive range of habitat.

Genus ARDETTA, *G. R. Gray.*

This genus has been instituted for the Little Bittern of the British Islands, and several other diminutive species inhabiting India, Africa, and America.

Sp. 562. ARDETTA PUSILLA.

MINUTE BITTERN.

Ardea pusilla, Vicill. Nouv. Dict. d'Hist. Nat., tom. xiv. p. 432.

—— *maculata*, Lath. Ind. Orn., Supp. p. lxiv, young.

Spotted Heron, Lath. Gen. Syn., Supp. vol. ii. p. 305, young.

Ardeola pusilla, Bouap. Compt. Rend. de l'Acad. Sci., tom. xliii. séance du 2 Août 1856.

Ardetta pusilla, Gould, *Birds of Australia*, fol., vol. vi. pl. 68.

The Minute Bittern is a very rare species, and at present nothing whatever is known respecting it. During my sojourn in the country I ascertained that the few individuals known had been procured between Sydney and Botany Bay. I have frequently had occasion to allude to the beautiful manner in which many birds peculiar to Europe are represented in Australia by other closely allied species, and the present bird forms another case in point, since it is clearly a representative of the Little Bittern (*Ardetta minuta*) of this part of the world, which it much resembles in the style of its plumage, but is of a still smaller size. This is another of the species, therefore, to which I would direct the attention of residents in its native country, with a view to their making known the result of their observations for the promotion of ornithological science.

The sexes differ considerably from each other, the female being mottled and of a smaller size than the male.

The male has the crown of the head, back, and tail bronzy greenish black; front of the neck buff, gradually passing into rich deep chestnut on the sides of the head and back of the neck; down the centre of the chin and neck in front a broad

irregular stripe of reddish brown ; on either side of the chest a patch of black feathers margined with deep buff ; all the under surface pale buff ; wing-coverts deep buff, with a patch of rich chestnut on the shoulder and a wash of the same colour along the edge of the wing ; primaries slaty black ; space round the eye, bill and feet yellow ; culmen nearly black ; irides orange.

The female has the head and back chestnut ; wing-coverts very deep tawny, passing into chestnut on the tips of the coverts and secondaries ; primaries grey, tipped with brown ; tail black ; sides of the neck pale chestnut ; front of the throat and the under surface white, with a stripe of tawny down the middle, and a small streak of brown in the centre of each feather, the brown hue predominating and forming a conspicuous mark down the throat.

Family RALLIDÆ.

Of this family no less than sixteen species inhabit Australia, and are comprised in the following genera, viz. *Porphyrio*, *Fulica*, *Gallinula*, *Rallus*, and *Porzana*, all of which are European forms ; and *Parra*, *Eulabeornis*, and *Tribonyx* : of the latter, the first is common to India and the Indian Islands, and the other two are confined, so far as we know, to Australia.

Genus PORPHYRIO, *Brisson*.

The members of this genus are among the very largest of the *Rallidæ*, are very highly coloured birds, their prevailing tints being blue or greenish blue interspersed with black, and are nearly allied to the nearly extinct *Notornes* of New Zealand. Species of this form are found in all the countries both of the Old and New Worlds.

Sp. 563. PORPHYRIO MELANOTUS, *Temm.*

BLACK-BACKED PORPHYRIO.

Porphyrio melanotus, Temm. Man. d'Orn. 2nd Edit., tom. ii. p. 701.

Black-backed Gallinule, Lath. Gen. Hist., vol. ix. p. 472.

Ar-ra-weid-bit, Aborigines of Port Essington.

Porphyrio melanotus, Gould, *Birds of Australia*, fol., vol. vi. pl. 69.

This bird is universally distributed over Tasmania and the greater part of the continent of Australia wherever situations suitable to its habits occur, such as marshes, lagoons clothed with sedge and rushes, and the sides of rivers. On comparing specimens from Tasmania, South Australia, and Port Essington, I find them to differ in size; those from the first- and last-mentioned localities being smaller than examples procured in South Australia and New South Wales: Gilbert's notes also indicate a difference in the habits of the Port Essington bird, but I am inclined to believe this to be merely the result of a difference in the nature of the locality and the kind of vegetation.

In Tasmania the *Porphyrio melanotus* is very abundant on the banks of the Derwent above Bridgewater; I also found it on the lagoons between Kangaroo Point and Clarence Plains, on the Tamar for ten miles below Launceston, and in every part of the island wherever favourable localities occur. Early in the morning, and on the approach of evening, it sallies forth over the land in search of food, which consists of snails, insects, grain, and various vegetable substances; it runs with great facility, and readily avails itself of this power on the approach of an intruder, making for the thickest covert, and threading it with amazing quickness, much after the manner of the Moorhen (*Gallinula chloropus*) of Europe; its flight is also very similar to that of the Moorhen, and like that bird it resorts to this mode of progression only when hard-pressed. In New South Wales it inhabits precisely the

same kind of situations as those described above, and is to be found in the lagoons at Illawarra, and wherever the vegetation affords it a sufficient shelter. It soon becomes domesticated, and may be allowed to roam at large in the garden or inclosure without fear of its wandering away. My friend Dr. Bennett, of Sydney, informs me that one he had seen domesticated in a poultry-yard was in the habit of roosting upon the roofs of sheds, and was very fond of perching on some parrot-cages; he mentions also that the bird invariably seizes maize, or any vegetable it intends eating, in the palm of the foot, holding it in that manner until it be devoured; after watching it for some time he never saw it take food in any other manner, and the owner assured him that it never did.

The sexes do not differ in colouring, but the female is somewhat smaller than the male, and the young have the naked space on the crown less developed and not so bright as in the adult.

Cheeks, back of the head, centre of the abdomen, and thighs sooty-black; back of the neck, breast, and flanks rich deep indigo-blue; back, wings, and tail deep shining black, the primaries with a wash of indigo-blue on their outer webs; under tail-coverts pure white; irides bright orange-red; frontal plate, bill, legs, and feet red.

Sp. 564. PORPHYRIO BELLUS, *Gould*.

AZURE-BREASTED PORPHYRIO.

Porphyrio bellus, Gould in Proc. of Zool. Soc., part viii. p. 176.

Swamp-Hen, Colonists of Western Australia.

Gool-le-ma, Aborigines of the lowland districts of Western Australia.

Porphyrio bellus, Gould, *Birds of Australia*, fol., vol. vi. pl. 70.

Of the two species of *Porphyrio* found in Australia the present is by far the finest, exceeding the *Porphyrio melanotus* not only in size, but in the greater diversity and richness of

its colouring, particularly in the azure-blue of the throat and chest, a character by which it is readily distinguished.

The Azure-breasted Porphyrio is abundant at Swan River, inhabiting the thick reed-beds and swampy districts of the lakes and rivers round Perth and Freemantle. Its habits and economy so nearly resemble those of the *Porphyrio melanotus* of Tasmania and New South Wales, that the description of one equally applies to the other, and therefore need not be repeated here.

The gizzard is strong and muscular, and the food consists of vegetable substances, aquatic insects, and mollusca.

The only difference observable between the sexes is, that the male is rather brighter in colour and somewhat larger in size.

Occiput and crown of the head blackish brown, gradually passing into the light violet-purple which spreads over the nape, flanks, and abdomen; throat, cheeks, fore part of the neck and breast light azure-blue; all the upper surface from the nape downwards, including the tail, deep chocolate-brown; shoulders and spurious wing azure-blue; primaries blackish brown, their outer webs strongly tinged with green; irides bright red; bill red; knees, lower part of the tarsi, and inside of the feet dark greenish grey; remainder of the legs and feet grass-green.

Total length 18 inches; bill $1\frac{3}{4}$; wing $10\frac{1}{2}$; tail $4\frac{1}{2}$; tarsi $3\frac{1}{2}$.

Genus TRIBONYX, *Du Bus*.

The habits and economy of the two known species of this genus differ so much from those of the Gallinules that no ornithologist can question the propriety of their separation. As their longer tarsi and shorter toes would indicate, they are more terrestrial than the members of the genus *Porphyrio*, and accordingly we find that they wander over the plains and open pasture lands, instead of keeping to the water or the sedgy portions of river-sides.

Sp. 565. TRIBONYX MORTIERII, *Du Bus*.

MORTIER'S TRIBONYX.

Tribonyx mortierii, Du Bus, Bull. Acad. Sci. Brux., tom. vii. p. 215, pl. *Brachytrallus ralloides*, Lafres. ?

Native Hen of the Colonists.

Tribonyx mortieri, Gould, *Birds of Australia*, fol., vol. vi. pl. 71.

This bird is rather abundantly dispersed over the southern parts of Australia and Tasmania, but from the extreme shyness of its disposition, and the almost inaccessible nature of the situations it frequents, it is seldom seen by ordinary observers. The localities it affects are marsh lands and the sides of rivers. It was daily seen by me during my stay on the Government demesne at New Norfolk, in Tasmania, where it frequently left its sedgy retreats and walked about the paths and other parts of the garden, with its tail erect like the Common Hen; even here, however, the greatest circumspection and quietude were necessary to obtain a sight of it, for the slightest noise or movement excited its suspicions, and in an instant it vanished in the most extraordinary manner into some thicket, from which it did not again emerge until all apparent cause for alarm was past.

The sternum and pectoral muscles of this bird are but feebly developed in proportion to its bulk, and it consequently rarely resorts to flight; on the other hand, the legs and thighs are extremely large, and hence its power of running is very great, and upon this it mainly depends for security from molestation. Its habits and general manners are very similar to those of the Moorhen (*Gallinula chloropus*) of Europe, but it does not dive or swim so much as that bird. It is very easily captured with a common horsehair noose, by which means some of my specimens were procured.

The male is about three pounds in weight; and the stomachs of those I examined were extremely thick and muscular, and contained aquatic plants and insects, gravel, &c.

The nest, which is very similar to that of the Moorhen, is formed of a bundle of rushes placed on the border of the stream: the eggs, which are also similar to that of the Moorhen, are seven in number, two inches and an eighth long, one inch and a half broad, and of a stone-colour, marked all over with thinly dispersed, irregularly shaped, and variously sized spots and blotches of dark chestnut-brown.

The sexes are alike in appearance, but the female is somewhat smaller and less brilliant in colour than the male.

All the upper surface greyish olive, washed with chestnut-brown on the head, back of the neck, back, and the tips of the secondaries; primaries blackish brown; tail deep black; under surface bluish slate-colour, passing into black on the abdomen and under tail-coverts; flank-feathers largely tipped with white, forming a conspicuous mark on each side; thighs purplish grey; irides orange-red; bill greenish yellow; legs and feet leaden yellow.

Sp. 566. **TRIBONYX VENTRALIS**, *Gould*.

BLACK-TAILED TRIBONYX.

Gallinula ventralis, Gould in Proc. of Zool. Soc., part iv. p. 85.

Tribonyx ventralis, Gould in App. to Grey's Trav. in Australia, vol. ii. p. 420.

Bel-gar-bê-jal, Aborigines of the lowland, and

Nól-yang, Aborigines of the mountain districts of Western Australia.

Moorhen of the Colonists.

Tribonyx ventralis, Gould, *Birds of Australia*, fol., vol. vi. pl. 72.

Since my attention has been directed to the ornithology of Australia, I have received this species from every part of the country southward of the 25th degree of south latitude, but I have not yet seen it from any part of Tasmania, that country being in all probability too cold and ungenial for its habits.

Although in outward contour and general appearance this bird bears a great resemblance to the Gallinules or Water-

hens, it will be found on comparison to possess a very different structure, particularly in the form of the tarsi and toes, and of the tail, and in its economy it differs from them quite as much as it does in form. Its migratory movements are very uncertain, great numbers occasionally visiting parts of the country where it had seldom before been seen, and retiring again to some distant unknown locality as suddenly as it appeared. We are naturally led to inquire whence they come, and anxiously to desire a more intimate knowledge of that great *terra incognita*, the interior of the country, by which means alone can the mystery be solved.

John Hutt, Esq., late Governor of Western Australia, informed me that in the neighbourhood of Perth the *Tribonyx ventralis* "sometimes makes its appearance suddenly in large flocks at a time," and asks, "Is this not a proof of there being an oasis of good land in the interior? This bird invaded the settlers' fields and gardens in the month of May 1833 in amazing numbers; it had not been seen before, and has hardly been seen since."

Gilbert states that "upon one occasion it visited the Swan River colony in myriads, treading down and destroying whole fields of corn in a single night. The natives, not having seen them before, attributed their appearance to the settlers, and for a long time termed them the 'White-men's birds': after the harvest was over they nearly all disappeared as suddenly as they arrived. The natives of the banks of the Upper Swan, on making inquiries respecting these birds of some of the tribes of the interior, were told they came from the north."

"This bird," says Captain Sturt, "appeared suddenly in South Australia in 1840. It came from the north, fresh flights coming up and pushing on those which had preceded them. It was moreover evident that they had been unaccustomed to the sight of man, for they dropped in great numbers in the streets and gardens of Adelaide, and ran

about like fowls. At last they increased so much in number as to swarm on all the waters and creeks, doing great damage to the crops in their neighbourhood. They took the entire possession of the creek near my house, and broke down and wholly destroyed about an acre and a quarter of wheat as if cattle had bedded on it. They made their first appearance in November, and left in the beginning of March, gradually retiring northwards as they had advanced."

"In the autumn of 1854," says Mr. Elsey, "the stations about the Mackenzie were besieged by swarms of this species. They remained some time, then disappeared, and not a single specimen appeared there for certainly the next three years."

I frequently met with the bird myself during my journey into the interior of New South Wales; it was tolerably abundant on the banks of the Mokai in the month of December 1839, but not in such numbers as particularly to attract my attention. When I first saw it I was much struck with its grotesque appearance, as it strutted along the bank of the river with its tail quite erect like that of a domestic fowl. Although the herbage on the river-sides was very scanty, and the plains were so parched that scarcely a blade of grass was to be seen, it readily eluded pursuit by its amazing powers of running, and secreting itself beneath the roots of the large trees or the shelving of the bank. I never saw it take wing, and I believe that it rarely resorts to flight for security.

It breeds in November, the nest, which is formed of dead soft grasses and rushes, being placed on the ground among the long grass-like rushes of the river-side. The eggs are seven in number, of a cream-colour, thinly sprinkled with irregularly shaped spots of chestnut-red, some of which appear as if beneath the surface of the shell: they are an inch and a half long by one inch and an eighth broad.

The stomach is extremely thick and muscular; and the

food consists of grain, seeds, and other vegetable substances, shelled mollusks, insects, &c.

Throat, breast, and under surface dark bluish grey; flank-feathers black, with an oblong mark of white near their extremities; lower part of the abdomen and under tail-coverts black; all the upper surface brownish olive; primaries brown, the outer one margined externally with white; tail black; irides fine orange; upper mandible beautiful pea-green, becoming rather paler at the tip; base of the lower mandible light reddish orange, the tip like that of the upper; legs and feet deep brick-red.

Total length 15 to 17 inches; bill $1\frac{1}{4}$; wing 9; tail $3\frac{1}{2}$; tarsi $2\frac{1}{4}$.

Genus GALLINULA, *Brisson*.

The true *Gallinulæ* are very numerous, and are found in nearly every part of the world. Australia is inhabited by a species peculiarly its own, which is distributed over all the southern parts of the continent. The well-known British Moorhen (*G. chloropsis*) is a typical example of this form.

Sp. 567. GALLINULA TENEBROSA, *Gould*.

SOMBRE GALLINULE.

Gallinula tenebrosa, Gould in Proc. of Zool. Soc., part xiv. p. 20.

Gallinula tenebrosa, Gould, *Birds of Australia*, fol., vol. vi. pl. 73.

This species of Gallinule inhabits the sedgy banks of rivers, creeks, and water-holes. I frequently encountered it in New South Wales, particularly in the neighbourhood of the Upper Hunter; and I also possess specimens collected on the banks of the Murray, in South Australia. The total absence of any white marks on the flanks forms a good specific character, and at once distinguishes this Gallinule from most of the other members of the genus. In size it considerably exceeds the

Gallinula chloropus of Europe ; and the garter above the knee is more brilliantly coloured with red and yellow than in that species. When disturbed, it readily eludes pursuit by running with great swiftness into a place of safety. It swims with considerable ease and buoyancy, and its food consists of various aquatic insects and small shelled mollusks.

The female is smaller than the male, and the colours of her bill are often brighter.

The whole of the plumage greyish black, with the exception of the back and scapularies, which are deep brown, and the primaries and tail, which are nearly a pure black ; under tail-coverts black in the centre and white on the sides ; frontal plate orange ; base of the bill blood-red, tip greenish yellow ; above the knee a garter of yellow and scarlet ; joints of the legs and feet green ; under surface of the legs and feet olive ; sides of the tarsi and frontal plates of the toes yellow ; frontal plates of the tarsi yellow, those nearest the knee stained with scarlet ; irides olive.

Total length 15 inches ; bill $1\frac{1}{4}$; wing 8 ; tail 3 ; tarsi $2\frac{1}{2}$.

Genus FULICA, *Linnaeus*.

Coots are found in nearly every part of the great continent of Europe, Asia, Africa, and America, and one species in Australia, where it represents the *Fulica atra* of Europe.

Sp. 568. FULICA AUSTRALIS, *Gould*.

AUSTRALIAN COOT.

Fulica australis, Gould in Proc. of Zool. Soc., part xiii. p. 2.

Mool'-ya-wiñ'-doo (Ugly Nose), and

Gid'-jee-broon, Aborigines of Western Australia.

Fulica australis, Gould, *Birds of Australia*, fol., vol. vi. pl. 74.

That a true Coot should be found in Australia need not

be a matter of surprise, when we have seen how many of the forms hitherto considered to be peculiar to the northern hemisphere are represented in that country; and in no instance is this law more interestingly carried out than in the present, since the two birds are not only identical in form, but are precisely alike in their habits and general economy.

The favourite places of resort of the Australian Coot are the inland waters of the country and the salt-water lagoons near the coast, which it seldom quits unless to seek for a more abundant supply of food, consisting of aquatic insects, small shelled mollusks, &c. Like the European species, it constructs a floating nest of decayed aquatic plants, upon which it deposits its eggs and rears its young.

Head and neck black; all the upper surface greyish black; under surface sooty black; irides bright red; bill light bluish grey; crown of the head greenish white; legs and feet french grey.

Total length 14 inches; bill $1\frac{1}{4}$; wing 8; tail $2\frac{1}{4}$; tarsi $2\frac{1}{4}$.

Genus *PARRA*, *Latham*.

A tropical form of birds, admirably adapted for progression among the aquatic plants and floating leaves of the lagoons and inland waters they frequent, and over which they pass with facility, their expansive feet spreading over a large surface of fallen grasses and leaves, readily sustaining them.

Species of this genus are found in India, Africa, and America.

Sp. 569. *PARRA GALLINACEA*, *Temm*.

COMB-CRESTED *PARRA*.

Parra gallinacea, *Temm*. Pl. Col., 464.

Mur-re-mā-rang-geit, Aborigines of Port Essington.

Parra gallinacea, *Gould*, *Birds of Australia*, fol., vol. vi. pl. 75.

The *Parra gallinacea* is one of the most typical members of

the genus, its hind-toe and claw being more largely developed than those of any other species ; hence it is beautifully and expressly adapted for traversing the leaves floating on the surface of the water.

The specimens in my collection were obtained at Port Essington, where this bird is tolerably numerous, but always affects such localities as render it very difficult to procure. Having never seen this species in a state of nature, I cannot do better than transcribe Gilbert's notes respecting it ; previous to which I may mention that it is also a native of New Guinea, and that Temminck published a figure of it in his 'Planches Coloriées,' as quoted above.

"I did not meet with this bird," says Gilbert, "until the latter part of my stay in the country, just before the wet season set in, when I observed it on the large lake near Point Smith, which at this time (the month of December) contained so little water that I could wade over every part of it ; and it was fortunate that this was the case, for this bird confines itself so much to the muddy parts of the middle of the lake, that it might be looked for in vain from the shores. It would seem to be a very local species, for I did not meet with it in any other part of the Peninsula. In the following January, after a succession of heavy rains, the lake became so far filled as to be too deep for a person to attempt to cross any part of it, consequently no second opportunity of observing the Parra occurred before my departure. Those observed by me were distributed in four or five small families in different parts of the lake, and were usually occupied in feeding from the floating aquatic plants, over which the great length of their toes and nails enables them to run with great facility : at the slightest alarm they dive down at once or take to flight. Their powers of diving and of remaining under water are equal to those of any bird I have ever met with : on the other hand, their powers of flight are very weak ; they will, however, often mount up fifteen or twenty yards, and fly from one end

of the lake to the other, a distance of half or three-quarters of a mile, but generally they merely rise above the surface of the water and fly off for about a hundred yards; during flight their long legs are thrown out horizontally to their full length; while feeding they utter a slowly-repeated *cluck-cluck*. The stomach is extremely muscular, and the food consists of aquatic insects and some kind of vegetable matter."

Mr. Elsey informed me that he procured examples of this bird "at a large lagoon, surrounded by a dense fringe of *Polygonum*, near the Flinders. Among them was a female, which contained matured eggs, and had, I felt convinced, a nest somewhere in the *Polygonum*, but I could not find it, though I closely examined the whole circuit. She remained out the whole day without once retiring to sit. Its singular calyptra was bright crimson, which colour seems to be due to the excessive vascularity of the membrane, as it was completely blanched before I got the bird out of the water."

I am indebted to Sir Daniel Cooper, Bart., for many acts of kindness in connexion with Australian ornithology, which I take this opportunity of recording. It is to him that I owe a knowledge of the eggs of this species, two examples having been transmitted to me, through his instrumentality, from Eastern Australia, by his relative Mr. Hills.

The ground-colour of these eggs is of a dark, shiny, raw sienna-tint, over which are traced in various directions a series of broad and fine hair-like contorted lines of brownish black, which, by occasionally uniting laterally and crossing each other, form here and there large blotches. Although these markings are of the same character on each egg, they are somewhat differently distributed; thus, on one of the two I possess they are more numerous at the larger end and absent at the smaller, while in the other they are more abundant at the smaller and less so at the larger extremity. The eggs are one inch and an eighth in length by seven-eighths of an inch in breadth. They are, moreover,

rendered remarkably conspicuous by the singularly pointed form of the smaller end, and by their small size as compared with that of the bird; but, above all, by the form and disposition of the markings, which are as if traced by the hand of a person who had amused himself by attempting to cover the surface with fantastic streaks, blotches, and contorted curves from end to end.

Back of the head, line down the back of the neck, tips of the shoulders, under surface of the wing, flanks, and a broad band crossing the chest and abdomen deep bluish black; chin and throat white; orbits, ear-coverts, sides of the neck and breast pale glossy orange, the white and the orange gradually blending into each other; back and scapularies bronzy olive-green, becoming nearly black at the base of the neck and on the rump; wing-coverts olive-brown; the remainder of the wing and tail greenish black; vent and under tail-coverts buffy white; irides light sulphur-yellow; eyelash light ash-grey; bill greenish grey at the extreme tip, then black to near the nostrils; the basal portion of the upper mandible and the helmet aurora-red; base of the lower mandible light primrose-yellow; fore part of the tibia red, with a mixture in patches of yellow and greenish grey; hinder part of the tibia, tarsi, and toes dark greenish grey.

The young differs in having all the under surface white, crown of the head and occiput reddish chestnut, the line down the back of the neck brown, and the back reddish brown, each feather margined with a still redder hue; only an indication of the helmet; irides light brown, and the bill aurora-red, with the exception of the base of the lower mandible, which is light yellowish white.

Genus HYPOTÆNIDIA, *Reichenbach*.

It would have been rather surprising if the *Rallus pectoralis* of Cuvier had not received a generic appellation, since it is very different in structure and habits from the true Rails, and is indeed very nearly allied to *Crex*. Other species of the form exist in New Zealand, the Celebes, and the Fiji Islands.

Sp. 570. HYPOTÆNIDIA PHILIPPENSIS.

PECTORAL RAIL.

Rallus philippensis, Linn. Syst. Nat., tom. i. p. 263.

Hypotænidia philippensis, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Kül-lee, Aborigines of the lowland districts of Western Australia.

Land-Rail of the Colonists.

Rallus pectoralis, Gould, *Birds of Australia*, fol., vol. vi. pl. 76.

The Pectoral Rail is a summer visitant to New South Wales; but if we regard the Rails from Southern and Western Australia, which are rather smaller and have somewhat more attenuated bills, as mere local varieties, the above remark will extend to the southern portion of the continent generally; in fact, it may then be said to be dispersed over the whole of this part of the country, in all situations suitable to its habits. It usually makes its appearance in New South Wales in the month of August, and retires again in February; the extent of its range northwards, however, I have not satisfactorily ascertained; for, although I have specimens from the north coast and Raine's Islet, they present sufficient differences in their form and markings to warrant the supposition of their being a distinct species.

In habits, actions, and general economy the *Hypotænidia philippensis* closely assimilates to the Land-Rail (*Crex pratensis*) of Europe, grassy flats between the hills and humid

places covered with dense herbage being the localities favourable to its mode of life. It has the same indisposition for exposing itself to view, the same manner of eluding pursuit by running through the grasses, and when forced to quit its retreat flies low, straight, and with the same flapping motion of the wing.

The eggs, which are placed on the ground, are four or six in number, of a cream-colour, with numerous large irregular blotches of dark chestnut-red at the larger end, and a few smaller ones distributed over the remainder of their surface; they are one inch and three-eighths long by one inch broad. It breeds in September, October, and November.

The stomach is very muscular, and is usually found to contain portions of grasses, seeds, and a quantity of sand. Its flesh forms an excellent article for the table, and the bird itself affords considerable amusement to the sportsman, as pointers will stand to it as to the Land-Rail of Europe.

The sexes are so similar in colour and markings that they are not easily distinguishable from each other, and the young at an early age assume the plumage of the adult.

Crown of the head and all the upper surface olive; each feather of the back and scapularies blackish brown in the centre; the feathers at the back of the neck with a double spot of black and white near the edge of each web; a broad stripe of chestnut-red commences at the base of the bill, passes through the eye, and unites at the occiput; wing-coverts olive, spotted on the margins with black and white; primaries dark brown, the two outer ones crossed by narrow bars of white, and the remainder with broad bars of dull chestnut-red; stripe over the eye and the chin greyish white, deepening into dark grey on the lower part of the throat; under surface brownish black, crossed by numerous narrow well-defined bars of greyish white; across the breast a broad band of deep sandy buff; thigh and vent buff; under tail-coverts black, barred with white and tipped with buff; bill

red at the base, passing into brown at the tip ; irides reddish hazel ; feet brown.

In some specimens the white spottings of the upper surface are much brighter than in others.

Genus RALLUS, *Linnæus*.

The genus *Rallus*, the type of which is the *R. aquaticus*, is represented in Australia by a single, or perhaps two species ; other examples of this truly fluviatile form are found both in the Old and New Worlds.

Sp. 571. RALLUS BRACHIPUS, *Swains*.

LEWIN'S WATER-RAIL.

Rallus brachipus, Swains. An. in Menag., p. 336.

—— *lewinii*, Swains. Ibid., p. 336.

—— *brachipus*, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 115.

Lewinia brachypus, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Rallus lewinii, Gould, Birds of Australia, fol., vol. vi. pl. 77.

In Tasmania this species is very abundant in all low marshy situations, lagoons, and the rushy banks of rivers ; it occurs on most of the small islands in D'Entrecasteaux Channel ; I have also seen specimens from Southern and Western Australia which are precisely similar in their markings, and only differ in being somewhat larger.

Swainson has, I think, described this bird under two names, those of *brachipus* and *lewinii*. The shortness of the nails and consequent apparent shortness of the toes, which must have suggested the former appellation, appears to pertain only to those birds which inhabit the small islands, where, from the hard and stony nature of the ground they have to traverse, the nails become much worn and blunted, while

those of the birds inhabiting the mainland and resorting more exclusively to the soft sedgy banks of rivers remain intact.

It is very closely allied to the Water-Rail (*Rallus aquaticus*) of Europe, and its habits, manners, and mode of life closely resemble those of that bird. In this species, then, we find another representative of European forms; for it as clearly resembles our Water Rail as the sombre Gallinule does the *Gallinula chloropus*, and the little Crake the *Porzana maruetta*; how similar, too, is the Pectoral Rail (*Hypotaenidia pectoralis*) to the well-known Corn Crake of the British Islands!

The stomach is rather muscular, and the food consists of aquatic insects and small mollusks, to which are doubtless added the leaves of aquatic plants and probably newts, frogs, and small fish.

A nest I found in a lagoon near the river Derwent, in Tasmania, was formed of flags and other aquatic vegetables, placed in a low tuft of rushes, and contained two eggs, one inch and a quarter in length by seven-eighths of an inch in breadth, and of a pale olive-colour, blotched all over, but particularly at the larger end, with reddish and dark brown.

The male has the head and sides of the neck rufous, striated with black on the crown and down the nape; all the upper surface and tail black, striped with olive; wings, flanks, and abdomen banded broadly with black and narrowly with white; chin white; centre of the throat, breast, and abdomen slate-grey; vent buff; bill brownish red; irides hazel; feet flesh-colour, becoming darker about the toes.

The female is similar, but not so bright in colour.

The young birds, when fully fledged, are destitute of the red hue on the neck, have only a trace of the barring on the flanks and abdomen, and the barring of the wings much less distinct than in the male. The chicks are clothed in a soft and silky black down.

Genus EULABEORNIS, *Gould*.

A genus established for the reception of a singular species of Rail inhabiting the north coast of Australia.

Sp. 572. EULABEORNIS CASTANEIVENTRIS, *Gould*.

CHESTNUT-BELLIED RAIL.

Eulabeornis castaneiventris, Gould in Proc. of Zool. Soc., part xii. p. 56.

—— *castaneiventris*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances du 15 et 22 Sept. 1856.

Mor-dug-e-ra, Aborigines of Port Essington.

Eulabeornis castaneiventris, Gould, Birds of Australia, fol., vol. vi. pl. 78.

This large and fine species of Rail inhabits the low muddy shores and mangrove swamps of the north coast of Australia. The specimen above alluded to, which is in my own collection, was killed in the Gulf of Carpentaria by Rear-Admiral Stokes, R.N., late Commander of H.M.S. the Beagle; to this gentleman I am also indebted for many acts of kindness and liberality, while science in more than one branch has been enriched by the discoveries made by himself and his officers during their late survey. I had some time before received the eggs of this species from Port Essington, but from its extreme shyness the bird could never be obtained; in fact, the wariness of its disposition is such, that even to catch a glimpse of it among the dense herbage and mangroves is an extremely rare occurrence. It runs with extraordinary fleetness, and takes alarm the instant the vicinity of its habitat is intruded upon.

The eggs are rather lengthened in form, of a pale pinky white, dotted all over with reddish chestnut, the spots being thinly dispersed, and some of them appearing as if beneath the surface of the shell, giving them a darker tint, two inches and one-eighth long, one inch and five-eighths broad.

Head and neck ash-grey ; all the upper surface, wings and tail olive ; breast and all the under surface greyish chestnut ; bill yellow at the base, horn-colour at the tip ; legs and feet brown.

Total length 19 inches ; bill $2\frac{1}{4}$; wing $9\frac{1}{2}$; tail 6 ; tarsi $2\frac{1}{2}$.

Both sexes will doubtless be hereafter found to possess a similar kind of plumage.

Genus PORZANA, Vieill.

The *Porzanæ* inhabit Europe, Africa, India and Australia ; the species inhabiting the latter country are very similarly marked to those inhabiting India and Europe. The form, but not the same species, also occurs in America.

Sp. 573. PORZANA FLUMINEA, Gould.

SPOTTED WATER CRAKE.

Porzana fluminea, Gould in Proc. of Zool. Soc., part x. p. 139.

Porzana fluminea, Gould, Birds of Australia, fol. vol. vi. pl. 79.

This species, like its representative in the British Islands (*Rallus porzana*, Linn.), inhabits morasses, reed-beds, and the neighbourhood of rivers clothed with dense herbage ; hence it is seldom to be seen unless the greatest trouble and labour be taken to hunt it out from its hiding-place. The uniform grey tint of its breast and under surface, and its smaller size, are characters by which it may at once be distinguished from the European species.

The Spotted Water Crake is an inhabitant of Tasmania, South Australia and New South Wales, to which portions of Australia it would seem to be confined. My stay in the country was too short to afford me opportunities of thoroughly investigating its habits, or of gaining any precise information respecting its nidification ; but it is natural to suppose that in

these respects it as closely assimilates to its European ally as it does in its structure and outward appearance.

The sexes present so little difference in colour, that they are only to be distinguished by dissection.

All the upper surface olive, with a broad stripe of blackish brown down the centre and two oval spots of white, bounded above and below with black on the margin of each web of every feather; primaries and secondaries brown; tail dark brown, margined with lighter brown and with an indication of white spots on the extreme edge; face, throat, chest and upper part of the abdomen dark slate-grey; lower part of the abdomen and flanks greyish black, crossed by narrow irregular bars of white; under tail-coverts white; bill orange-red at the base, and dark olive-green for the remainder of its length; feet dark olive-green.

Total length 7 inches; bill $\frac{7}{8}$; wing $3\frac{3}{4}$; tail $1\frac{3}{4}$; tarsi 1.

Sp. 574. PORZANA PALUSTRIS, *Gould*.

LITTLE WATER CRAKE.

Porzana palustris, Gould in Proc. of Zool. Soc., part x. p. 139.

Porzana palustris, Gould, *Birds of Australia*, fol., vol. vi. pl. 80.

This little Water Crake would appear to be more abundant in Tasmania than on the continent of Australia, for although I clearly ascertained that it inhabits New South Wales, it is not so numerous there, in consequence, probably, of the country being much less fluviatile, and therefore much less suitable to its habits; for, like the *Porzana fluminea*, the present bird finds a natural abode in morasses covered with reeds and luxuriant herbage, to the more dense parts of which it is exclusively confined. Like all the other members of the genus, the present species swims with great facility, and displays the same power of diving, to which it equally resorts in time of need, and thus often successfully eludes the attack of its natural enemies; in addition, few birds are more agile or

thread the reeds with greater activity ; hence, like the last species, it is seldom to be caught sight of unless the greatest vigilance be exerted in search of it.

I am indebted to the Rev. T. J. Ewing, D.D., of Tasmania, for the nest and eggs of this bird ; the former is a flat structure formed of various kinds of grasses, and the latter are four or five in number, of a nearly uniform brownish olive, about one inch in length by three-quarters of an inch in breadth.

Head and back of the neck rusty brown, with a stripe of blackish brown down the centre of each feather ; feathers of the back, scapularies, and secondaries brownish black margined with rusty brown, and with an oblong stripe or mark of white, interrupted in the middle with black ; wing-coverts rusty brown, a few of them marked on their inner webs like the scapularies ; primaries brown, two or three of the innermost with a mark or marks of white at the tip ; tail dark brown, fringed with rusty brown ; face, throat, chest and upper part of the abdomen grey ; lower part of the abdomen and flanks blackish grey, crossed by broad irregular bands of grey ; bill and feet olive-brown.

Total length 6 inches ; bill $\frac{3}{4}$; wing 3 ; tail $1\frac{1}{2}$; tarsi 1.

Sp. 575. PORZANA? TABUENSIS.

TABUAN WATER CRAKE.

Tabuan Rail, Lath. Gen. Syn., tom. iii. p. 235.

Rallus tabuensis, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 717.

Ortygometra tabuensis, G. R. Gray, Voy. of Ereb. and Terr., Birds, p. 14.

Corethrura tabuensis, G. R. Gray, Gen. of Birds, vol. iii. p. 595, and App. 527.

Gallinula immaculata, Swains. An. in Menag., p. 337.

Wa'-ra-jah, Aborigines of the lowland districts of Western Australia.

Little Swamp Hen of the Colonists.

Porzana? *immaculata*, Gould, Birds of Australia, fol., vol. vi. pl. 82.

I believe I am correct in stating that this species is uni-

versally distributed over the whole of Australia, Tasmania and the islands in Bass's Straits. Specimens from every one of the colonies so closely resemble each other that they scarcely exhibit sufficient difference to constitute local varieties. Besides inhabiting Australia, this species appears to be widely spread over many of the islands of the Indian Ocean, such as the Society, Tonga, and Feejees; and I question if any one of the Rails has received so many specific appellations, or if there be one whose synonyms are so numerous. (See a list of them in Mr. G. R. Gray's 'Catalogue of the Birds of the Tropical Islands of the Pacific Ocean in the Collection of the British Museum,' p. 53.) Like the other members of this group, this bird is very recluse in its habits, and seldom to be seen, although it is tolerably abundant in all districts of a wet and swampy character, where thick reed-beds and the sedgy banks of rivers or lagoons constitute its most favourite places of abode. When urged by necessity, it swims with grace and elegance, and sports about with ease among the floating leaves of aquatic plants in search of snails and other mollusks, of which, with insects, seeds, and the tender blades of grasses and other vegetables, its food consists. It rarely takes wing, scarcely ever indeed unless forced to do so.

I regret that I did not succeed in finding the nest and eggs of this bird, as in all probability they will be found to differ from those of the typical *Porzana*, and also from those of the true Rails.

The sexes are precisely alike in colour, and the young, when fully fledged, are very similar to the adults.

Head and all the under surface dark slate-grey, becoming nearly white on the chin; back, wing-coverts, and tertiaries rich deep reddish brown; bill black; irides and eyelash bright red; feet and legs dull brick-red.

Genus ERYTHRA, *Reichenbach*.

In accordance with the views of Professor Reichenbach, I adopt the above generic term for this singularly marked Rail. It is the only species I have seen from Australia. I believe another species is found in the Indian Islands, and that the synonyms assigned to it by Mr. G. R. Gray in his 'Catalogue of the Birds of the Tropical Islands,' in the British Museum, will require modification.

Sp. 576. ERYTHRA QUADRISTRIGATA.

WHITE-EYEBROWED WATER CRAKE.

Rallus quadristrigatus, Horsf. Linn. Trans., vol. xiii. p. 196.

— *quadristriatus*, Licht.

Gallinula mystacinus, Temm. ?

Porzana leucophrys, Gould in Proc. of Zool. Soc., part xv. p. 33.

Erythra leucophrys, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Al-man-dŭl-ar-ga, Aborigines of Port Essington.

Porzana leucophrys, Gould, Birds of Australia, fol., vol. vi. pl. 81.

This species is an inhabitant of the northern parts of Australia, where it frequents the thick clumps of mangrove roots bordering the lakes. It is a somewhat familiar bird, and is but little disturbed by the approach of an intruder ; on the contrary, it will frequently run up a branch, turn round, gaze at him, and utter its very singular loud and chattering *cutche, cutche*, with but little apparent alarm. Occasionally several are heard in chorus, as if attempting to excel each other in noise. It is by no means difficult to obtain specimens, except when the water is too deep to admit of wading round the roots of the mangroves. As yet it has only been observed on one lake near Port Essington ; but as the natives are perfectly acquainted with it, it is doubtless abundant on some other part

of the Coburg Peninsula. It is also found in Java, and, I believe, in several of the islands of the Indian Ocean.

The stomachs of those dissected were muscular, and contained the remains of insects of various kinds, and a large proportion of sand. The bird also eats worms, slugs, and the leaves of aquatic plants; these kinds of food being obtained either in the marshes or while swimming, which it can do as perfectly as the Moor Hen, Gallinule and little *Porzana*.

As the nest and eggs of this species have not yet been discovered, they form some of the desiderata to which I would call the attention of the rising ornithologists of Australia; and I can assure them that the study of the eggs will greatly assist them in assigning the birds to which they belong to their proper genus.

The young differ from the adult in having only an indication of the marks on the face, in having the crown of the head brown instead of brownish black, and the sides of the neck and flanks deep buff instead of dark grey.

From the base of the upper mandible to the posterior angle of the eye a streak of greyish white; from the eye to the gape a broad patch of deep black; crown of the head brownish black; back of the neck, upper surface and tail brownish black, each feather margined with pale reddish, the latter colour becoming very conspicuous on the wing-coverts and scapularies; wings pale brown; sides of the head, neck, and breast grey; chin and centre of the abdomen white; flanks and under tail-coverts rufous; upper mandible reddish brown; tomia of both mandibles tile-red; legs and feet oil-green, blotched with light ash-colour.

Total length $6\frac{1}{2}$ inches; bill 1; wing $3\frac{1}{2}$; tail 2; tarsi $1\frac{3}{8}$.

Order NATATORES.

Upon taking a general view of the birds of this order inhabiting Europe and Australia, our attention cannot fail to be arrested by some remarkable contrasts which present themselves to our notice. I allude to the great excess in the number of species of some of the principal groups, and the paucity of others; for instance, of the *Anatidæ*, the European fauna comprises at least forty species, while eighteen are all that are known in Australia; of the *Laridæ*, exclusive of the Terns, twenty species inhabit Europe, while three are all that are known in Australia; on the other hand, sixteen species of Terns frequent the shores of Australia, while about twelve resort to those of Europe; of the family *Procellariidæ*, or Albatroses and Petrels, nearly forty species enliven the Australian seas, while about seven are all that are known to inhabit those of Europe; of the Mergansers, Puffins, and Guillemots of the northern hemisphere no species is found in Australia or in any other part of the south seas; on the other hand, the Penguins so common there are unknown in Europe; while the Grebes and Cormorants are about equal in number in both hemispheres. Australia, it is true, has a Swan, but it is of a different form, and is but a feeble representative of the true *Cygni* of our part of the world; the same may be said of the Geese, for she has no member of the genus *Anser*; neither does any species of this important group of birds exist south of the line, either in Australia or any other country.

Family ANATIDÆ.

Of this family the most important Australian species is the Black Swan, and the next the Cereopsis Goose. Like Europe, that country has two fine Sheldrakes, about three true Ducks, two species of Shovellers, two Tree- and three Diving-

Ducks, one of which, the *Biziura lobata*, is confined to the country; these, with the little *Nettapi* and the members of two or three other genera, comprise the whole of her *Anatidæ*. The absence of large rivers and the non-existence of great lakes is doubtless the cause of this paucity of aquatic birds in the interior; but how are we to account for the absence from her seas and rocky shores of the huge Steamer Ducks so common in similar latitudes of South America, and of the *Berniclæ* which are so numerous at the Falklands?

Genus CHENOPIS, *Wagler*.

Subdivided as the avifauna of the world now is, it would have been surprising, indeed, if the Black Swan had been left in the old genus *Cygnus*, from which it departs in many particulars; I accordingly adopt the above generic term, which Wagler had the honour of proposing for it.

Sp. 577.

CHENOPIS ATRATA.

BLACK SWAN.

Black Swan, Philip's Voy., p. 96.—White's Journ., p. 137.

Anas atrata, Lath. Ind. Orn., vol. ii. p. 834.

—— *plutonia*, Shaw, Nat. Misc., pl. 108.

Black Swan of Van Diemen, D'Entrecast. Voy., 8vo, vol. i. p. 140, pl. 9.

Shawian or Black Swan, Penn. Outl., vol. iv. p. 130.

Cygnus atratus, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 18.

Chenopsis atrata, Wagl. in Oken's Isis, 1832, p. 1234.

Le Cygne noir, Cuv. Règne Anim., tom. i. p. 529.

Mul-go, Aborigines of New South Wales.

Gbl-jak, Aborigines of Perth.

Mâl-lee, Aborigines northward of Perth.

Cygnus atratus, Gould, Birds of Australia, fol., vol. vii. pl. 6.

This "rara avis in terris" is not only strictly confined to Australia, of which country it forms one of the most orna-

mental of its feathered tribes, but is so exclusively an inhabitant of the southern and western districts, that no notice has been recorded of its having been seen in Torres Straits, or on any part of the north coast.

The first notice on record respecting it occurs in a letter written by Mr. Witsen to Dr. M. Lister about the year 1698, in which he says, "Here is returned a ship, which by our East India Company was sent to the south land called *Hollandia Nova*;" and adds that Black Swans, Parrots, and many Sea Cows were found there. In 1726 two were brought alive to Batavia, having been procured on the west coast of Australia, near Dirk Hartog's Bay. Our celebrated countryman and navigator Cook observed it on several parts of the coast, and from that time to the present it has attracted the attention of every traveller in Australia, and been noticed by most authors who have written upon its natural productions; still, all that has hitherto been placed upon record has been mere notices of its existence, unaccompanied by any information respecting its habits and economy, or the extent of its range; and my account will fall far short of what the historian of so noble a bird ought to be able to give; for our knowledge of it is still very limited, and must necessarily remain so until geographical research has cleared our path, and made us more intimately acquainted with the portions of the country it principally inhabits.

I may state that the Black Swan is generally distributed over the whole of the southern portion of Australia, the islands in Bass's Straits, and the still more southern country of Tasmania, wherever there are rivers, estuaries of the sea, lagoons, and pools of water of any extent; in some instances it occurs in such numbers that flocks of many hundreds may be seen together, particularly on those arms of the sea which, after passing the beach-line of the coast, expand into great sheets of shallow water, on which the birds are seldom disturbed either by the force of boisterous winds or the intru-

sions of the natives. In the white man, however, the Black Swan finds an enemy so deadly, that in many parts where it was formerly numerous it has been almost, if not entirely, extirpated; and this has been particularly the case on some of the large rivers of Tasmania, such as the Derwent, &c.; but in the salt lagoons and inlets of D'Entrecasteaux's Channel, the little-frequented bays of the southern and western shores of that island, the entrance to Melbourne Harbour at Port Philip, Spencer's and St. Vincent's Gulfs in South Australia, the Clarence, MacLeay and other rivers northward of the Hunter in New South Wales, the Black Swan is still numerous. One most destructive mode by which vast numbers are annually destroyed is that of chasing the birds in a boat at the time they shed their primary quill-feathers, when being unable to fly they are soon rowed down and captured; this practice, which is much to be regretted, is usually resorted to for the sake of the beautiful down with which the breasts are clothed, but not unfrequently in mere wantonness. I have heard of the boats of a whaler entering an estuary and returning to the ship, nearly filled with Black Swans destroyed in this manner.

When flying it forms a most conspicuous object, the white of the wings offering a strong contrast to the black colouring of its body and the green herbage bounding the scene in which it is disporting.

The breeding-season commences in October and continues to the middle of January; I procured newly-hatched young clothed in greyish white down at South Port River on the 31st of December, and I took five newly-laid eggs on Flinders' Island, in Bass's Straits, on the 13th of January. The nest is of a large size, composed of flags and other herbage, and generally placed on an isolated island. The eggs are from five to eight in number, of a pale green, stained all over with buffy brown, four and a half inches long by two inches and three-quarters broad.

In disposition, unless molested, or its precincts intruded upon, it is as tame, gentle, and harmless as it is graceful and ornamental in appearance, and as it readily becomes domesticated there are few aviaries in Europe which are not adorned with its presence.

But no one has been so fortunate in breeding the Black Swan as Samuel Gurney, Esq., and the following account of the fecundity of a single pair kept by that gentleman on his estate at Carshalton, on the River Wandle, in Surrey, I consider to be of the highest interest :—"They were," says Mr. Gurney, "purchased from Baker, of Leadenhall Market, in 1851; they did not breed until 1854, when they laid their first egg on January 1. It was a most severe winter—snow on the ground and intense frost nearly the whole time they were sitting. They hatched their young during the greatest cold of that winter, from which they did not suffer, though they had no shelter of any kind, and their nest was fully exposed to the east wind. Out of the ninety-three young ones hatched by them up to this present year, 1862 (inclusive), about half that number have been reared. Some of them have died from disease; but most of them have been killed by the old ones dragging them about in the fields, when they have fallen into small holes on their backs, and have not been able to recover themselves. They have bred sixteen times in seven years, having laid one hundred and eleven eggs. The nest was composed of a large heap of rushes, collected by themselves, to which they were continually adding during incubation. The male and female would sit alternately on the nest. The male bird was found dead on February 17, 1862. No cause could be assigned for his death, as he had been in perfect health."

The whole of the plumage brownish black, the under surface paler than the upper; the feathers of the back tipped with greyish brown; primaries and secondaries pure white; bill beautiful pinky scarlet, crossed near the tip with a broad

band of white; the extremities of both mandibles are also white; irides scarlet; eyelash and lores pinky scarlet; feet black.

Genus CEREOPSIS, *Latham*.

But one species of this singular and strictly Australian form has yet been discovered, and I do not think it likely that another will be found.

Sp. 578. CEREOPSIS NOVÆ-HOLLANDIÆ, *Lath*.

CEREOPSIS GOOSE.

Cereopsis novæ-hollandiæ, Lath. Ind. Orn., Supp. p. lxvi.

New Holland Cereopsis, Lath. Gen. Syn. Supp., vol. ii. p. 325, pl. 138*.

Cereopsis cinereus, Vieill. Gal. des Ois., tom. ii. pl. 284.

Anser griseus, Vieill. 2nde édit. du Nouv. Dict. d'Hist. Nat., tom. xxiii. p. 338.

Cereopsis australis, Swains. An. in Menag., p. 219, fig. 32.

Cape Barren Goose of the Colonists.

Cereopsis novæ-hollandiæ, Gould, Birds of Australia, fol., vol. vii. pl. 1.

This is one of the Australian birds which particularly attracted the notice of the earlier voyagers to that country, by nearly every one of whom it is mentioned as being very plentiful on all the islands in Bass's Straits, and so tame that it might be easily knocked down with sticks or even captured by hand; during my sojourn in the country I visited many of the localities above-mentioned, and found that, so far from its being still numerous, it is almost extirpated; I killed a pair on Isabella Island, one of a small group near Flinders' Island, on the 12th of January 1839. I believe that it may be still found on some parts of the south coast of Australia; but in the colonized districts, where it has been much molested, it has now become so scarce that it is very rarely seen. It passes the greater portion of its time on the ground, and seldom takes

to the water. It appears to be strictly a vegetable feeder, and to subsist principally upon grasses in the neighbourhood of the coast; consequently its flesh is excellent, and all who have tasted it agree in extolling its delicacy and flavour. It bears confinement remarkably well, but is by no means a desirable addition to the farmyard; for it is so pugnacious, that it not only drives all other birds before it, but readily attacks pigs, dogs, or any other animal that may approach, and often inflicts severe wounds with its hard and sharp bill.

Its voice is a deep, short, hoarse, clanging, and disagreeable sound. It readily breeds in confinement. The eggs are creamy white, about three inches and a quarter in length by two inches and a quarter in breadth.

The sexes are precisely alike in plumage; and the young at an early age assume the plumage of the adults, but have the greenish yellow cere much less conspicuous.

Crown of the head whitish, the remainder of the plumage brownish grey; the wing-coverts and scapularies with a spot of brownish black near the tip; the feathers of the back margined with pale brownish grey; the apical half of the primaries, the tips of the secondaries, the tail, and the under tail-coverts blackish brown; bill black; cere lemon-yellow; irides vermilion; eyelash dark brown; legs reddish orange; toes, webs, claws, and a streak up the front of the legs black.

Living examples of this species have graced the gardens of the Zoological Society, from their formation to the present time; and also formed part of the extensive collection kept by King George the Fourth in the Great Park at Windsor. They bred there as freely as the Emus or any of the other animals of Australia, and are all descended from one pair originally brought to this country. (See a detailed account of the history of the genus *Cereopsis*, and of these birds, in the late E. T. Bennett's 'Gardens and Menagerie of the Zoological Society delineated,' Birds, p. 315.)

Genus **ANSERANAS**, *Lesson*.

This genus, like that of *Cereopsis*, contains but a single species, and is peculiar to Australia.

Sp. 579. **ANSERANAS MELANOLEUCA.**

SEMIPALMATED GOOSE.

Anas melanoleuca, Lath. Ind. Orn., Supp. p. lxix.

Black and White Goose, Lath. Gen. Syn. Supp., vol. ii. p. 344.

Anas semipalmata, Lath. Ind. Orn., Supp. p. lxix.

Semipalmated Goose, Lath. Gen. Syn. Supp., vol. ii. p. 347, pl. 139.

Anseranas melanoleuca, Less. Man. d'Orn., tom. ii. p. 418.

Choristopus semipalmatus, Eyton, Mon. Anat., p. 79.

Anseranas melanoleuca, List of Birds in Brit. Mus., part iii. p. 125.

Newal-gang, Aborigines of New South Wales.

Anseranas melanoleuca, Gould, *Birds of Australia*, fol., vol. vii. pl. 2.

When New South Wales was first colonized, this fine species was very abundant on the Hawkesbury; it is however no longer a denizen of that river, or perhaps of any of the streams within the colony, and thus affords another instance that the progress of civilization invariably leads to the gradual extirpation of the more conspicuous of the natural productions of the countries over which it extends its sway; it is still, however, abundant as we progress northwards, and gradually becomes more numerous until we reach the rivers and lagoons which empty themselves into Torres Straits; here it occurs in such countless multitudes that it forms one of the chief articles of the food of the Aborigines, and was of the utmost value to Leichardt and his party, during their adventurous journey from Moreton Bay to Port Essington, as shown in numerous parts of his interesting account of the expedition. So dense are the flocks that occur in the northern parts of the country, that the natives are enabled to procure

numbers of them by spearing; and, says Leichardt, "It seemed that they only spear them when flying, and always crouch down when they see a flight of them approaching; the geese, however, know their enemies so well that they immediately turn upon seeing a native rise and put his spear into the throwing-stick: some of my companions asserted that they had often seen them hit their object at the almost incredible distance of two hundred yards;" an assertion which, from what I have myself witnessed, I can readily believe.

It is well known that many of the natatorial birds exhibit very singular conformations of the trachea, but in no one species are the convolutions and situation of this organ more remarkable than in the present bird. "The trachea," says Yarrell, in the fifteenth volume of the 'Linnean Transactions,' p. 383, "is situated on the outside of the pectoral muscle, under the skin, sufficiently raised under the wing that respiration would not be impeded when the bird rested with its breast on the ground, the parallel tubes being firmly attached both to the muscle and the skin by cellular tissue. The clavicle of the right side of the bird is of the usual character, but that on the left is both shorter and wider, having an aperture about the middle, the sides diverging with a projecting point on the inner side, to which the tube of the trachea is firmly attached, about two inches above the bone of divarication. The trachea lying on the left side of the bird, the lower portion of the tube in its passage to the lungs crosses the left branch of the furcula at a right angle, but becoming attached to this projection of the clavicle, receives from the point described its central direction into the body. The whole length of the windpipe is four feet eight inches." In young birds the trachea is not nearly so much convoluted. This curious structure of the trachea has also been noticed and figured by Latham, on the 178th plate of his 'General History of Birds,' vol. x. p. 295, above quoted. The specimens from the north are somewhat smaller than those from

the south coast, and have the knob on the bill rising higher on the forehead.

Head, neck, wings, centre of the back, tail and thighs glossy greenish black, the remainder of the plumage white; irides blackish brown; bill reddish brown; feet yellow.

Genus CHLAMYDOCHEN, *Bonaparte*.

The Australian bird referred to this genus is the only one of a form which is nearly allied to, but differs in several minor particulars from, *Bernicla*.

Sp. 580. CHLAMYDOCHEN JUBATA.

MANED GOOSE.

Anas jubata, Lath. Ind. Orn., Supp. p. lxi.

Hawkesbury Duck, Lath. Gen. Syn. Supp., vol. ii. p. 358, pl. in title-page.

Bernicla jubata, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 63.

Chlamydochen jubata, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Mat-rang-an-ner, Aborigines of the lowland districts of Western Australia.

Wood Duck, Colonists of New South Wales and Swan River.

Bernicla jubata, Gould, Birds of Australia, fol., vol. vii. pl. 3.

During the period I had the privilege of observing the birds of Australia in a state of nature, no one of the natatorial forms interested me more than the present species. The result of my observations enables me to state that it seldom, if ever, visits Tasmania or any of the islands in Bass's Straits; but that on the continent of Australia it is met with at Swan River in South Australia and on the east coast generally, and that its probable range extends across the country between the 25th and 30th degrees of south latitude. During the early days of the colony of New South Wales, it was very

common on the rivers near Sydney, particularly on the Hawkesbury; at the present time it is sometimes seen there, and is still numerous on the Hunter and other rivers towards the interior limits of the colony. In South Australia it is one of the commonest of the water birds, frequenting the brooks of the interior. No specimen has yet been procured at Port Essington, nor, as far as I am aware, on any part of the north coast. It presents a very pleasing appearance while flying up and down the brooks in flocks of from six to thirty in number, and is equally interesting when perched in small companies on the branches of fallen trees which have found a resting-place in the beds of the rivers and water-holes, or when sitting on the topmost branches of the high gum-trees in the midst of the woods. Its flesh is excellent, and not unfrequently forms an acceptable repast for the settled colonist and the weary traveller. It frequently utters a loud barking note so unlike the voice of any other goose, as at once to excite the attention of any person who may be traversing the parts of the country it inhabits. I found it to be tolerably tame in disposition, which circumstance enabled me to procure numerous examples without difficulty.

It usually breeds in the hollow parts of large trees, those chosen for the purpose being often situated in the bush far away from water.

The food consists of grasses and aquatic plants, snails, and insects.

The sexes vary considerably in size and in the beauty of their plumage, the male far exceeding the female in both respects.

The male has the head and neck rich brown; the lengthened plumes down the back of the neck black; back, lesser wing-coverts, tertiaries and scapularies brownish grey; the scapularies very broadly margined on their external webs, and very narrowly on their internal webs, with deep velvety black; lower part of the back, rump, upper tail-coverts and tail deep

black ; greater wing-coverts dark grey largely tipped with pure white, the two colours separated by a narrow line of black ; spurious wing and primaries very dark brown, the latter deepening into black at their extremities ; outer webs of the secondaries or speculum rich glossy green broadly margined with white, their inner webs grey ; the last two have their outer webs entirely glossy green and their inner webs grey, with the exception of a narrow margin of white ; breast-feathers buffy white, each feather crossed by two irregular bands of brown, the margin between the bands freckled with brown, and a spot of black at each end of the band nearest the tip, giving the whole a mottled appearance ; flanks silver-grey, delicately pencilled with fine wavy lines of black ; centre of the abdomen and under tail-coverts deep glossy black ; bill olive-brown ; irides very dark brown ; legs and feet dark brown.

The female has the head and neck pale brown, speckled with white on the sides of the face ; all the upper surface and wings greyish brown ; the scapularies stained with black on their outer webs ; lower part of the back black ; primaries brown ; secondaries and greater coverts tipped with white, the former with a trace of the glossy green so conspicuous in the male, at the base of the outer webs ; the markings of the breast are similar to those of the male, but they are larger and paler, and the feathers are destitute of the minute freckles on the margins of the feathers ; flanks light brown, crossed with bars of white freckled with brown ; centre of the abdomen and under tail-coverts white.

Although I have applied the trivial name of goose to this bird it has but little relationship to the typical member of the genus *Anser*, none of which, as stated in the introduction, exist in Australia, nor, so far as I am aware, in any of the Polynesian Islands.

Genus NETTAPUS, *Brandt*.

Of this genus of Pygmy Geese there are now at least four species known ; one inhabiting Africa, one India, and two Australia.

Sp. 581. NETTAPUS PULCHELLUS, *Gould*.

GREEN PYGMY GOOSE.

Nettapus pulchellus, Gould in Proc. of Zool. Soc., part ix. p. 89.

Loon-byte, Aborigines of the northern coast of Australia.

Little Goose, Residents at Port Essington.

Nettapus pulchellus, Gould, *Birds of Australia*, fol., vol. vii. pl. 4.

The acquisition of an entirely new species of *Nettapus*, a generic name applied to these Pygmy Geese by M. Brandt of St. Petersburg, is not one of the least valuable results of the exploration of the northern coast of Australia ; independently of its great beauty, the present species is interesting, as uniting most completely, in the character and disposition of some of its markings, the two previously known species, *N. coromandelianus* and *N. madagascariensis*, which differ very considerably in these points. Although very goose-like in the form of its head, particularly in the elevation of the upper mandible, its largely webbed feet indicate a strictly aquatic mode of life ; and in the notes accompanying the two specimens shot at Port Essington by Gilbert, he states that he first saw a pair of these beautiful birds on the 16th of January, swimming on a quiet secluded lake, shut in on all sides by very high grass : both of these he succeeded in killing at a shot ; he further states that they are rare in the Peninsula, only one specimen having been procured prior to his obtaining these two. It is an extremely shy species, and at the slightest movement of anything near it, dives and remains under water a long time. Having, on dissecting the female, found a nearly developed egg in the ovarium, he was induced

to seek for the nest, which he found built up in the long grass about a foot above the water, the bottom of the nest resting on its surface ; it was composed of long dried grasses, slightly hollowed for the reception of the eggs : the nest in this instance was destitute of any kind of lining ; but one afterwards brought him by the natives was interiorly constructed with feathers and contained six eggs, which are white, one inch and seven-eighths long by one inch and three-eighths broad.

Mr. Gregory informs me that during his expedition " this elegantly symmetrical waterfowl was only found on the Sherlock river. It is remarkable for its tameness and for its light and sportive movements on the water. It was seen in flights of eight or ten together."

The male has the head brownish green, indistinctly barred with light brown ; beneath the eye an oval spot of white ; neck, back and wings deep glossy green ; primaries black ; outer webs of the secondaries snow-white ; feathers of the chest, sides and back of the neck white, with a number of greenish-black circles one within the other, so numerous that the white is nearly lost ; flanks similarly marked, but in them the circles, bars, and pencillings are broader and more apparent ; tail black glossed with green ; abdomen white ; under tail-coverts black ; irides dark brown ; bill dark greenish grey ; legs and feet blackish brown, with a yellowish-white nail ; under mandible greenish grey, irregularly blotched with a lighter colour.

The female resembles the male, but differs in having the crown, occiput and a stripe down the back of the neck deep brown ; in being destitute of the white spot beneath the eye ; in having the chin and upper part of the throat white, mottled with small markings of brown ; bill French grey, becoming more yellow at the base ; lower mandible bluish grey ; tarsi fleshy white on the sides, back and front blackish brown ; feet dark brown.

Total length $12\frac{1}{2}$ inches ; bill $1\frac{1}{8}$; wing $6\frac{1}{2}$; tail 3 ; tarsi 1.

Sp. 582. **NETTAPUS ALBIPENNIS**, *Gould*.

WHITE-QUILLED PYGMY GOOSE.

Nettapus albipennis, Gould Birds of Aus., fol. vol. i. Introd. p. xci.

Nettapus coromandelianus, Gould, Birds of Australia, fol., vol. vii. pl. 5.

This species is nearly allied to the *Nettapus coromandelianus* of Java and India, from which it differs in being of a much larger size ; I have therefore named it *Nettapus albipennis*, a term applicable to both, but which, from the greater length of the primaries, and the consequent increased development of the white mark on those feathers of the Australian bird, will, I hope, not be deemed an inappropriate appellation.

This elegant little Goose is tolerably abundant on the eastern portions of the Australian continent, inhabiting the estuaries and rivers between the ranges, and the coast from the Hunter to Moreton Bay, and in all probability far to the northward of these localities, though my knowledge of its range will not allow me to say such is the case, as it is one of the few birds of New South Wales which I had no opportunity of observing in a state of nature ; I am consequently unable to furnish any account of its habits and economy ; neither, I regret to say, can I supply the deficiency from the notes of any other observer.

The sexes are easily distinguished from each other by the greater size of the male, and by the far more brilliant colouring of his markings.

Mr. Jerdon, speaking of the allied species, *N. coromandelianus*, says, "it frequents weedy and grassy tanks in moderate or rather large flocks, flies with great rapidity, uttering a cackling call, and is, when undisturbed, very familiar and unwary. It breeds generally in the holes of trees, often at some distance from water, and lays eight or ten white eggs." This account I have no doubt is equally descriptive of the present species.

Genus TADORNA, *Leach*.

The Australian Shieldrake does not, that I can perceive, differ sufficiently from the *T. vulpanser* of Europe to warrant its generic separation; I have not, therefore, adopted Reichenbach's generic term of *Radjah* for this very delicately coloured bird.

Sp. 583.

TADORNA RADJAH.

RADJAH SHIELDRAKE.

Anas radjah, Garnot, Voy. de la Coquille, p. 602.—Atlas to ditto, pl. 49.
 — *leucomelas*, Garnot (Bonap.).

Tadorna radjah, Eyton, Mon. of the Anat., p. 106.

Radja eytoni, Reich. (Bonap.).

White Duck, Residents at Port Essington.

Co-mér-do, Aborigines of Port Essington.

Tadorna radjah, Gould, *Birds of Australia*, fol., vol. vii. pl. 8.

This beautiful Shieldrake is found in numerous flocks on all the lakes and swamps of the northern and eastern portions of Australia; like the other members of the genus, it frequently perches on trees and resorts to the hollow branches and boles for the purpose of breeding, the young being removed to the water by their parents immediately after they are hatched. When the rainy season has set in, and the water of the lakes has become too deep for them to reach the roots of a species of rush upon which they feed, they scatter over the face of the country, and are then to be seen wading through the mangrove bushes and over the soft mud left by the receding tide, the surface of which affords an abundant supply of food, consisting of crabs, mollusks, and other marine animals. The sexes present no visible difference in their colour or markings, nor is there a sufficient difference in size to distinguish the male from the female.

Head, neck, breast, abdomen, flanks, wing-coverts, inner

webs, and tips of the outer webs of the secondaries white; band across the breast and upper part of the back rich deep chestnut, which colour gradually passes into the deep dull black of the scapularies, tertiaries, back, rump, and tail; feathers of the centre of the back finely freckled with chestnut; outer edges of tertiaries rich reddish chestnut; wing-coverts crossed near the tip of each feather with a narrow irregular line of black; speculum, or base of the outer webs of the secondaries, rich, shining, bronzy green, between which and the white tip is a broad line of dull black; primaries and spurious wing black; lower part of the flanks and under tail-coverts dull black, freckled with white; irides yellowish white; bill and legs reddish flesh-colour, with, in some great specimens, a bluish tinge.

Genus CASARCA, *Bonaparte*.

The species of this section of the *Anatidæ* are not very numerous; one or two inhabit New Zealand and one Australia, which latter represents the *C. rutila* of Europe.

Sp. 584. CASARCA TADORNOÏDES.

CHESTNUT-COLOURED SHIELDRAKE.

New Holland Shieldrake, Lath. Gen. Hist., vol. x. p. 306.

Anas tadornoides, Jard. and Selb. Ill. Orn., vol. ii. pl. 62.

Casarca tadornoides, Eyton, Mon. of the Anat., p. 171.

Goo-rá-ga, Aborigines of the lowland districts of Western Australia.

Mountain Duck, Colonists of Swan River.

Casarca tadornoides, Gould, *Birds of Australia*, fol., vol. vii. pl. 7.

This fine Shieldrake is universally spread over all such parts of Tasmania, South and Western Australia, as present localities suitable to its habits, but is nowhere very plentiful. During my residence in Tasmania I saw several fresh specimens that had been shot on the lakes of the interior of the

rally clothed in a sombre-coloured dress ; neither do the sexes offer sufficient difference of colour by which the one may be distinguished from the other. Arms of the sea, rivers with sedgy banks, lagoons, and water-holes are its favourite places of resort. I met with it often and under every variety of circumstance, sometimes in flocks, at others either singly or in pairs, and not unfrequently in company with other species. The tameness of its disposition depends much upon whether the locality has or has not been frequented by man ; in some of the rivers in Recherche Bay in Tasmania and others in the interior of the continent of Australia, which are rarely visited, it evinced much less shyness than when observed on the waters of the populated districts. It is everywhere either a stationary species or subject to very partial migrations. In the choice of a breeding-place it appears to be influenced by circumstances, sometimes depositing its eggs among long grass and sedges, and not unfrequently resorting to hollow spouts and boles of trees for the same purpose. Nine eggs, taken in September from the hollow part of a tree at Moore's River in Western Australia, were of a dark cream-colour, two inches and a quarter long by one inch and five-eighths broad.

Head very dark brown ; a narrow line above the eye, a broad stripe from the bill beneath the eye, and the throat buff ; sides of the neck striated with buff and dark brown ; all the upper surface, wings, and tail rich brown ; the feathers narrowly margined with buffy brown ; tips of the greater wing-coverts velvety black ; speculum rich deep glossy green, bounded posteriorly with velvety black ; under surface brown, each feather edged with pale brownish white ; bill light bluish lead-colour ; irides bright hazel ; legs yellowish brown, with darker webs.

The above is the description of a male ; the female, as before stated, is very similarly coloured.

Sp. 586. **ANAS PUNCTATA**, *Cuvier*.

AUSTRALIAN TEAL.

Anas punctata, Cuv.

Mareca castanea, Eyton, Mon. Anat., pl. in p. 119.

—— *punctata*, List of Birds in Brit. Mus. Coll., part iii. p. 134.

Gnwool-ye-nūg-ger-rang, Aborigines of the lowland districts of Western Australia.

Teal, Colonists of Swan River.

***Anas punctata*, Gould, Birds of Australia, fol., vol. vii. pl. 11.**

The *Anas punctata* is universally diffused over the southern portion of Australia; it is also equally numerous in some parts of Tasmania. It is not migratory, but may be met with during every month of the year. In two instances I found its nest and eggs. The situation of one was rather unusual, a hole near the top of a large tree growing on the flats near Aberdeen on the Upper Hunter; this occurred in the month of October, and in the following December I raised a female from her nest among the herbage on Green Island in D'Entrecasteaux's Channel. In both instances the eggs were nine in number.

Like the Wild Duck and Teal of Europe, this bird inhabits rivers, brooks, lagoons, and ponds, both inland and near the sea. It is a true grass-feeder, and is one of the best Ducks for the table found in the country. When surprised it rises quickly, but is less active than the European Teal; it is, however, a bird of powerful flight. I frequently met with it in vast flocks while ascending the little-visited rivers of the southern part of Tasmania, particularly those which empty themselves into Recherche Bay. In these retired and solitary retreats it is much more tame than in frequented situations, and never failed to fly down the rivers over our heads as we ascended; a measure which, although at the first view it appears to be that of flying into the danger it wished to avoid, was in fact the readiest means of escaping;

for had it taken the opposite course, it would have required great exertion to surmount the impenetrable forest of high trees, rising perpendicularly from the water's edge, in which these short and sluggish rivers usually terminate. It is very rare that the male is killed in the nuptial dress, and I am induced to believe that it is not assumed until the bird is two or three years old; after the breeding-season the sexes are alike in plumage, and for at least nine months of the year there is no difference in their outward appearance.

The adult male in the spring of the year has the head and neck of a rich deep changeable bronzy green; the whole of the upper surface rich brown, narrowly margined with light reddish brown; all the under surface chestnut, with a round spot of black near the tip of each feather; greater wing-coverts white; outer webs of the secondaries deep rich velvety black, two or three of the central feathers margined with bronzy reflexions; remainder of the wings brown; tail dark brown; on either side of the vent a patch of white; under tail-coverts black, freckled with tawny and white; bill bluish lead-colour; the nail and the edges of the upper mandible black, and the under mandible crossed near the tip by a band of reddish flesh-colour; irides hazel; feet lead-colour, with the membranes of a somewhat darker hue.

The female, the male in winter, and the young male of the year, have the head and neck minutely striated with brown and buffy white; all the under surface brown, with a blotch of black in the centre of each feather, and the upper surface, wings, and tail similarly marked, but less brilliant than in the male.

There appear to be two very distinct races of this bird, one of which is much larger than the other; so great in fact is the difference in this respect in specimens from various parts of the country, that the idea presents itself of their being really distinct species. The smaller race inhabits Tasmania, the larger the western and southern portions of Australia.

Genus **STICTONETTA**, *Reichenbach*.

A very singular form, nearly allied to *Chaulelasmus*. The only species of the genus is a very rare bird, and has only yet been seen on the western and southern coasts of Australia; it probably inhabits the distant interior. Reichenbach has assigned it the above generic title, which I have much pleasure in adopting.

Sp. 587. **STICTONETTA NÆVOSA**, *Gould*.

FRECKLED DUCK.

Anas nævosa, Gould in Proc. of Zool. Soc., part viii. p. 177.

Stictonetta nævosa, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Freckled Duck, Colonists of Western Australia.

Anas nævosa, Gould, *Birds of Australia*, fol., vol. vii. pl. 10.

Two specimens of this rare Duck are all that had come under my notice when my folio edition was completed; several other examples have since been sent to Europe, all of which bore a general similitude. The native habitat of the species are the western and southern parts of Australia. A further knowledge of this bird would be highly interesting: and it would be especially desirable to know whether the plumage in which I have figured it be permanent, whether, like most other members of its tribe, the bird undergoes seasonal changes, and also if the speculum of the wing be absent in the male as well as in the female.

The stomach is very muscular, and those examined contained small fish and minute shells.

The whole of the plumage is dark brown, minutely freckled and spotted with irregular oblong marks of white in the direction of the feathers; the under surface the same, but lighter and tinged with buff; wings without a speculum;

primaries plain brown ; irides light brown ; bill greenish grey, becoming much darker at the tip ; legs bluish green.

Total length 17 inches ; bill $2\frac{1}{2}$; wing 9 ; tail 3 ; tarsi 2.

Genus SPATULA, *Boie*.

The great continents of America, Africa, Asia, and Australia are each inhabited by one or more species of this restricted genus. The well-known Shoveller of the British Islands is the type of this form, all the members of which are true grass-feeding Ducks, and most of them are subject to seasonal changes. The nuptial dress of the male is very beautiful.

Sp. 588. SPATULA RHYNCHOTIS.

AUSTRALIAN SHOVELLER.

Anas rhynchotis, Lath. Ind. Orn., Supp. p. lxx.

New Holland Shoveller, Lath. Gen. Syn. Supp. vol. ii. p. 359.

Rhynchaspis rhynchotis, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 123.

Spatula rhynchotis, List of Birds in Brit. Mus. Coll., part iii. p. 140.

Bär-doo-ngoõ-ba, Aborigines of the lowland districts of Western Australia.

Shovel-nosed Duck of the Colonists.

Spatula rhynchotis, Gould, Birds of Australia, fol., vol. vii. pl. 12.

In size and structure, and particularly in the conformation of the bill, the *Spatula rhynchotis* closely assimilates to the *Spatula clypeata* of Europe and the *Spatula variegata* of New Zealand ; and the three species, whose distinctive characters are most plainly marked, are doubtless all characterized by a similarity of habits and actions. Although ranging widely from east to west, the habitat of this species, so far as is yet known, is confined to the southern portion of Australia. It is, however, more abundant in Tasmania and the islands in Bass's Straits. New South Wales, South Australia, and

Swan River all come within the range of its habitat, but it is much more rare in Western Australia than in any other of the countries I have enumerated. Freshwater rivers, creeks, marshes, lakes, and pools both near the coast and in the interior of the country are the situations in which the Australian Shoveller is to be found. I frequently met with it in company with other common ducks of the country, all united in one flock. It feeds on aquatic plants, shelled mollusks, and water insects. Its flesh as an article of food is little if at all inferior to that of the Australian Wild Duck (*Anas superciliosa*); consequently it is frequently shot and eaten by the settlers. Like most of its tribe it assumes a richer dress at one season than at another, that of the spring or pairing-time being much the finest; at other times the male is so much like the female, which undergoes no change of plumage, as scarcely to be distinguishable from her.

I did not succeed in finding the breeding-places of this species, consequently I am unable to give any account of its incubation, nest, or eggs.

The male has the crown of the head and the space surrounding the base of the bill brownish black; on either side of the face between the bill and the eye a broad lunar-shaped line of white, bounded posteriorly by speckles of black; head and neck grey, with greenish reflexions; all the under surface very dark chestnut-brown, each feather with a broad crescent-shaped mark of black at the tip, which is very conspicuous on the breast; flanks rich chestnut, each feather crossed by several broad crescentic bands of black; back brownish black, the feathers of the upper part margined with greyish brown; lesser wing-coverts and outer webs of the scapularies blue-grey, the inner webs of the latter black, with a distinct line of white in the direction of and next to the shaft; greater wing-coverts black, largely tipped with white; outer webs of the secondaries rich deep glossy green; primaries very dark brown with lighter shafts; under surface of the wing white;

on either side of the vent a patch of white, freckled with black ; under tail-coverts black, tinged with shining green ; tail dark brown ; irides bright yellow ; bill dark purplish black, the under mandible clouded with yellow ; legs and feet yellow.

The female has the head and neck buff, striated with dark brown, the latter colour predominating on the crown of the head and back of the neck ; all the upper surface dark brown, each feather margined with whitish brown ; the wings as in the male, but the colours and markings much less brilliant and decided ; all the under surface mottled brown and buff.

Sp. 589.

SPATULA CLYPEATA.

EUROPEAN SHOVELLER.

Anas clypeata, Linn. Syst. Nat., tom. i. p. 200.

—— *rubens*, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 519.

Clypeata macrorhynchos, *platyrhynchos*, *pomarina*, et *brachyrhynchos*, Brehm, Handb. der Naturg. aller Vög. Deutschl., pp. 876, 877, 878, 879.

Rhynchaspis clypeata, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii. séances des 15 et 22 Sept. 1856.

Although I have no Australian skin of this species to confirm the following remarks, I must ask my ornithological readers both in Australia and Europe to take my word for the occasional appearance of the bird in Australia. When I visited New South Wales during the rainy season of 1839, all the depressed parts of the land were filled with water, and the lagoons here, there, and everywhere were tenanted by hundreds of Ducks of various species, and every now and then one, two, or more beautifully plumaged Shovellers were seen among them ; but I did not succeed in shooting one of them, and must have left the matter in doubt as to the particular species, if the late Mr. Coxen, of Yarrundi, had not had the skin of a splendid old male in his possession, which he had himself shot, and which, after a careful examination, I found to be identical with the *Spatula clypeata* of Britain and

the European continent. Misfortune, I regret to say, attended Mr. Coxen's specimen ; for a day or two afterwards a rat or some other kind of vermin entered the room in which it was kept, ate off its bill and legs, and so otherwise mutilated the skin as to render it useless. The débris would still have been saved had I not hoped and felt assured of obtaining other examples with my gun ; this hope, however, was never realized.

To this subject, therefore, I recommend the attention of those in Australia, who will doubtless meet with the bird some day when the country is subject to a partial inundation. That this species should extend its wanderings to Australia is not a matter of surprise, when we know that it has been found within the tropics, both in the Old and New Worlds.

To enable my Australian readers to recognize the bird, I append a careful description of the two sexes, and of the male after the termination of the breeding-season.

The male has the head and upper part of the neck deep glossy green ; lower part of the neck, breast, scapularies, and sides of the rump white ; back blackish brown, each feather margined with grey and tinged with green ; lesser wing-coverts and some of the scapularies greyish blue ; tips of the larger coverts white, forming a bar across the wing ; speculum rich green ; tertials rich purplish black, with a streak of white down the centre ; middle tail-feathers brown, edged with white, outer ones entirely white ; upper and under tail-coverts black, tinged with green ; under surface reddish brown ; flanks and vent pale brown, crossed with numerous irregular lines of black ; bill blackish brown ; legs orange-red.

The female has the whole of the upper surface deep brown, each feather barred and margined with white.

After the breeding-season is over, the male has the cheeks, sides of the neck, and throat reddish white, speckled with brown ; crown of the head and nape of the neck black, glossed with green, and each feather with a paler margin ;

back and scapulars deep brown, margined with pale yellowish brown ; breast mingled yellowish brown and white ; abdomen mingled yellow and orange-brown.

Genus **MALACORHYNCHUS**, *Swainson*.

A very delicate form, of which the single species, confined to Australia, is the only one known ; and in which a beautiful pink-colour, unusual in the plumage of birds, shows itself in the shape of a minute spot on each side of the head.

Sp. 590. **MALACORHYNCHUS MEMBRANACEUS.**

PINK-EYED DUCK.

Anas membranacea, Lath. Ind. Orn., Supp. p. lxix.

— *fasciata*, Shaw, Nat. Misc., pl. 697.

New Holland Duck, Lath. Gen. Syn., Supp. vol. ii. p. 359.

Membranaceous Duck, Lath. Gen. Hist., vol. x. p. 331.

Rhynchaspis fasciata, Less. Traité d'Orn., p. 632.

— *membranacea*, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 124.

Malacorhynchus membranaceus, Swains. Class. of Birds, vol. ii. p. 366.

— *fasciatus*, Wagl.

Wrongi, Aborigines of New South Wales.

Wym^h-bin, Aborigines of Perth, Western Australia.

Pink-eyed Duck, Colonists of Swan River.

Malacorhynchus membranaceus, Gould, *Birds of Australia*, fol. vol. vi. pl. 13.

Although this is by no means a common bird in any part of Australia that I have visited, it is very generally distributed over the southern portion of that country, and it also occasionally visits Tasmania ; its occurrence there, however, is very irregular, the shortness or duration of the intervals being evidently influenced by some peculiarity of the season. Shallow freshwater lagoons seem to be its favourite places of resort ; hence, in New South Wales during the rainy season, when the flats and hollows are temporarily filled with water, giving life to myriads of the lower animals upon which this

Duck feeds, its presence may at all times be looked for, while on the other hand it is seldom to be met with during seasons of drought. As it has never yet been seen out of Australia, or even on the northern shores of that country, we may reasonably suppose that toward the interior it finds situations suited to its existence, and where it doubtless breeds; but respecting this portion of its economy no particulars whatever have yet been ascertained. No one of the tribe that I have observed in a state of nature presents a more elegant or graceful appearance than this little Duck, which is generally seen in small companies of from six to twenty in number, swimming over the placid lagoons, and betraying so little fear and shyness on the approach of man, as to present a singular contrast in this respect to the other members of the family. Its flight is very powerful and swift.

The sexes are so perfectly similar in plumage as not to be certainly distinguished; but the male is generally the larger.

Sides of the face and chin white; crown greyish brown, becoming paler on the forehead; space round the eye, and a line from either eye uniting at the occiput and passing down the back of the neck brownish black; immediately beneath this line and behind the dark patch surrounding the eye an oblong mark of rose-pink; back and wings brown, very minutely freckled with black; rump dark brown; upper tail-coverts buffy white, with a broad stripe of dark brown across the tip of each; tail dark brown, slightly tipped with white; sides of the head and neck, back of the neck, and all the under surface brownish white, crossed by numerous dark brown fasciæ, which are narrow on the sides of the head and neck, broad and distinct on the back of the neck, the breast, and flanks, and nearly obliterated on the centre of the abdomen; under tail-coverts deep buff; irides dark reddish brown; bill varies from greenish grey to bluish olive; tip of the lower mandible white; tarsi and toes emerald-green in some specimens and yellow-brown in others; webs dark brown.

Genus DENDROCYGNA, *Swainson*.

This form is found in India, Africa, America, and Australia; the bird I have separated into a distinct genus under the appellation of *Leptotarsis* should be included in the genus, the difference which it presents being too slight to warrant its division therefrom.

Sp. 591. DENDROCYGNA GOULDI, *Bonaparte*.

WHISTLING TREE-DUCK.

Anas arcuata, Cuv., Horsf. Zool. Research. in Java.

Dendrocygna arcuata, Swains. Class. of Birds, vol. ii. p. 365.

—— —, var. *Gouldi*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xliii., séances des 15 et 22 Sept. 1856.

En-jép-ere, Aborigines of Port Essington.

Whistling Duck of the Colonists.

Dendrocygna arcuata, Gould, Birds of Australia, fol., vol. vii. pl. 14.

I possess specimens of this fine Duck from Moreton Bay and from various parts of the north coast, on comparing which with others procured in Java I find that they are larger, and that they have the throat and fore-part of the neck of a less deeply tinted buff. These and other minor differences induced the late Prince Charles L. Bonaparte to give the Australian bird a new specific appellation, that of *gouldi*. I believe the Prince was right in considering it distinct from *D. arcuata*, and it would therefore be ungraceful in me not to accept the compliment from my distinguished coadjutor.

During the months of September, October, November, and December the Whistling Duck assembles in vast flocks on the lakes around the settlement at Port Essington: the lagoons and water at that season of the year are so shallow, that this and many other species of the Duck tribe are enabled to wade among the herbage and procure an abundant supply of

food. Gilbert states that, on the approach of man or the report of a gun, this and the other species in company with it rise altogether, but that each species separates itself into a distinct flock during the act of rising. While on the water it is quite silent, emitting no kind of noise; but all the time it is on the wing it gives utterance to a peculiar whistle.

The stomach is extremely muscular, and the food consists of small fish and aquatic plants.

Some eggs brought to the settlement by the natives, and said to belong to this bird, were taken early in March, from nests built in long grass on the small islands adjacent to the harbour at Port Essington; they are of a creamy white, one inch and seven-eighths long by one inch and a half in breadth.

Crown of the head, line down the back of the neck, all the upper surface, wings and tail brownish black, each feather of the back broadly margined with deep buff; wing-coverts deep chestnut; chin white; sides of the head buffy white; breast deep buff, each feather crossed by a short bar of black; abdomen chestnut; line down the centre of the abdomen and vent buff, mottled with black; under tail-coverts white; flank-feathers buffy white, margined on either side with two stripes, the inner one of which is brownish black and the outer chestnut; irides dark brown; bill black; tarsi greenish grey; feet blackish grey.

Sp. 592. DENDROCYGNA EYTONI, *Gould*.

EYTON'S TREE-DUCK.

Leptotarsis eytoni, Gould, MS.—Eyton's Mon. of Anat., p. 111.

Dendrocygna eytoni, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 132.

Now-ē-rāyen, Aborigines of Port Essington.

Leptotarsis eytoni, Gould, *Birds of Australia*, fol., vol. vii. pl. 15.

I gave the specific name of *eytoni* to this fine bird as a just tribute of respect to T. C. Eyton, Esq., a gentleman ardently

attached to the science of ornithology, and well known for his valuable 'Monograph of the Anatidæ.'

The true habitat of the species appears to be the north-west coast of Australia, where, as Captain Stokes informs me, "it is one of the commonest birds of the country. When on the wing it makes a peculiar whistling sound that can be heard at a great distance, and which changes as it alights into a sort of chatter. It perches on trees in a very clumsy manner, swinging and pitching to and fro. We subsequently often found it on the rivers of the north coast, but not within some miles of their mouths, or near their upper waters, from which it would appear that it inhabits certain reaches of the river only; we never found it in the swamps. The furthest south it was afterwards met with was on the Albert River, in the Gulf of Carpentaria, in lat. 18° S., which gives it a range of six and a half degrees of latitude over the northern part of the continent. Its nest never came under our notice, consequently we are not aware either of the size or colour of the eggs; neither did we see any young birds during the period of our observation, ranging from July to November."

Mr. White, of Adelaide, in a letter to me, says, "I found a nest of this species in a log; I am not sure of the number of eggs it lays, but the natives say about eight or ten, mostly in the sand-hills, at Cooper's Creek."

To this I may add another note supplied by the late Mr. Elsey:—"The Whistling Duck is very common, and was frequently shot on lagoons in the interior, but is very wary on the river. Large V-shaped flights passed over our camp during March, from S.E. to N.W., in which direction the bird appears to have a favourite resort."

Crown of the head and back of the neck dark sandy brown; sides of the head and neck and the breast fawn-colour; throat and fore part of the neck brownish white; all the upper surface greyish olive-brown; rump and tail brownish black,

crossed by a band of buff; primaries and secondaries deep sandy red; tertiaries dark brown; across the upper part of the abdomen a broad band of purplish sandy red, each feather crossed by several narrow bands of black; feathers immediately before and beneath the insertion of the wing chestnut-red, crossed by several broad bars of black; flank-feathers buff, broadly and distinctly margined with black; lower part of the abdomen and under tail-coverts buffy white; feet flesh-colour; irides dark orange.

Genus NYROCA, *Fleming*.

The members of this genus are true diving Ducks, and obtain much of their food from the muddy bottoms of lakes and estuaries.

Sp. 593. NYROCA AUSTRALIS, *Gould*.

WHITE-EYED DUCK.

Nyroca australis, Gould, MSS. Eyton, Mon. of Anat., p. 160.

Er-roo-dod', Aborigines of the lowland districts of Western Australia.

Bud-bun-bun-loot, Aborigines of Port Essington.

White-winged Duck of the Colonists.

Nyroca australis, Gould, *Birds of Australia*, fol., vol. vii. pl. 16.

This bird is frequently seen on the rivers in Tasmania, where I am certain that it breeds, the eggs in my own collection having been taken on the banks of the Derwent; I also shot many individuals on the Upper Hunter in the autumn of 1839, and, from what I could learn from persons resident there, it visits those parts of New South Wales when the lagoons are filled with water and food consequently abundant. The flats between Aberdeen and Scone were tenanted by hundreds of these birds, in company with the Pink-eyed Ducks and Shovellers. I have also a fine example killed by the late Commander Iuce, R.N., near the

settlement at Port Essington, where, however, it is very rare; it is also occasionally met with in Western Australia. In this bird we have another beautiful representative of a species common to Europe and India, the *Nyroca leucophthalmos*, both birds having white eyes and a similar style of plumage; the Australian species differs, however, from its near ally in having a lighter-coloured plumage, and less of the chestnut hue; it is also a much larger bird. Quiet reaches of rivers where the water runs slowly, bays and inlets of the sea and lagoons, are among its favourite places of resort. As may be supposed, it is a very excellent diver, and gains much of its food beneath the surface of the water, readily descending to the bottom in search of small mollusca, crustaceans, insects, and aquatic plants.

The only outward difference between the sexes consists in the female being rather smaller than the male, and somewhat less bright in colour.

The male has the general plumage chestnut-brown; across the breast a broad band of brownish white; secondaries white at the base, forming a conspicuous mark across the wing, and tipped with bronzy brown; basal portion of the inner webs of the primaries and under tail-coverts white; bill black, with a band of blue-grey near the tip; irides white; fore part of the tarsi lead-colour; hind part of the tarsi and the webs blackish brown.

Why is it that so many of the Australian birds have white irides? What can be the object and intention of this departure from the normal rule? The following are a few of the instances in which this peculiarity occurs:—the Crow, *Grallina*, and *Struthidea*; the beautiful Marsh Gull, of the genus *Chroicocephalus*; and the present bird.

Genus *ERISMATURA*, *Bonaparte*.

The members of this genus, although but few in number, are found in Europe, Asia, Africa, America, and Australia. They are especially adapted for immersion, and for obtaining their food from the bottom of the water rather than on its surface.

In Bonaparte's Classification these birds are placed next to the Mergansers, and are raised to the rank of a family—*Eris-maturidæ*—comprising the following genera: *Biziura*, *Thalassiornis*, and *Erismatura*. I think, however, the Prince was not justified in uniting *Merganetta* with them, which, in my opinion, should be associated with the Mergansers.

Sp. 594. *ERISMATURA AUSTRALIS*.

BLUE-BILLED DUCK.

Oxyura australis, Gould in Proc. of Zool. Soc., part iv. p. 85.

Erismatura australis, Eyton, Mon. of Anat., p. 172.

Bood-doo, Aborigines of the lowland districts of Western Australia.

Blue-billed Duck of the Colonists.

Erismatura australis, Gould, *Birds of Australia*, fol., vol. vii. pl. 17.

This bird would appear to be so limited in its habitat as to be confined to the colony of Western Australia; at least up to this time it has not been discovered in any other part of the country. Gilbert's notes inform me that it is never seen in the rivers, either those communicating with the sea or those of the interior, and that it is only found on the lakes running parallel to and near the coast that are surrounded with high reeds and tea-trees. Its general habits resemble those of the *Biziura lobata*; like that bird it possesses the power of remaining under water for a great length of time, and if closely hunted flaps along the surface without taking wing. Its voice is a peculiar inward tone, which the natives describe by saying, "it has no voice, but makes a noise with its heart."

It breeds in September and October, constructing a nest very like that of the *Biziura lobata*, and laying from two to nine or ten eggs, which are of a large size, and of a uniform bluish white, with a very rough surface; two inches and five-eighths long by two inches broad.

Its food consists of insects, shelled mollusks, fish, &c.

The sexes differ very considerably in plumage.

The male has the whole of the head, throat, and neck black; chest, breast, back, and flanks rich chestnut; wings and tail brownish black; rump brownish black, freckled with brown; belly and under tail-coverts brownish grey, obscurely marked transversely with dark brown; irides very dark brown; bill light blue; front and inner side of the tarsi and toes french-grey; outside of tarsi and webs blackish grey.

The female is the same size as the male, and has a plumage of uniform blackish brown, transversely marked with indistinct zigzag lines and freckles of chestnut-brown, lighter and more greyish brown on the under surface; tail-feathers black; bill dark olive-green; the under mandible lighter than the upper; irides, legs, and feet as in the male, but paler.

I append a description of that portion of the economy of the North African species *Erismatura leucocephala* which relates to its nidification, because it serves to confirm my assertion that the eggs of the Australian bird are from two to ten in number, which is rendered remarkable by the circumstance of the nearly allied *Biziura lobata* being said to lay only two.

“We found two nests of the White-headed Duck,” says the Rev. H. B. Tristram, “among the sedge, containing, the one three, the other eight eggs. These are very large for the size of the bird, almost perfectly elliptical in shape, of an extremely rough texture, unlike that of any other Duck, more resembling the egg of the Bean Goose, but far more coarsely grained and of a dull white colour. The habits and flight of the bird are more like those of a Grebe than a Duck: it often saves itself by diving, and remains under water for a considerable time.”—*Ibis*, 1860, p. 163.

Genus BIZIURA, *Leach*.

A genus of which only a single species is known, and which is singularly different from every other member of the *Anatidæ*; so different, in fact, that I question if this be its natural situation; and although, like Bonaparte, I have placed it next to *Erismatura*, I believe its alliance to that form is but a seeming one. There is something about this extraordinary bird which reminds one of the Cormorants; yet no ornithologist would, I presume, associate it with those birds. Like many other of these antipodean forms, it must be regarded as an anomaly. It is, in fact, a *Biziura*, and nothing more, for it stands alone.

The male has a lengthened, stiff, and leather-like appendage hanging from the under surface of the bill; the female is similarly clothed, but is not above half the size of the male, and is destitute of the appendage which renders the male so conspicuous.

Sp. 595. BIZIURA LOBATA.

MUSK-DUCK.

Anas lobata, Shaw, Nat. Misc. pl. 255.

Lobated Duck, Lath. Gen. Syn. Supp., vol. ii. p. 349.

Biziura novæ-hollandiæ, Steph. Cont. of Shaw's Gen. Zool., vol. xii. p. 222.

Hydrobates lobatus, Temm. Pl. Col., 406.

Biziura lobata, Eyton, Mon. of Anat., p. 168.—Bonap. Comp. Rend. de l'Acad. Sc., tom. xliii., séances des 15 et 22 Sept. 1856.

Anas carunculata, Vieill. 2^{de} Edit. du Nouv. Dict. d'Hist. Nat., tom. v. p. 109.

Go-da-ra, Aborigines of Western Australia.

Biziura lobata, Gould, Birds of Australia, fol., vol. vii. pl. 18.

This singular species is widely and very generally distributed over the whole of the southern countries of Australia, including Tasmania and the smaller islands in Bass's

Straits. I have specimens in my collection from the extreme western, southern and eastern portions of the continent, which present no differences sufficiently marked to establish a second species. It frequents deep bays and inlets of the sea, the upper part of rivers, lakes, and secluded pools. More than a pair are rarely seen at one time ; often a solitary individual takes up its abode in some favourite pool, where it lives a life of complete seclusion, depending for its food and for its preservation from danger upon its powers of diving rather than upon those of flying. Although I have many times come suddenly upon this bird I could never force it to take wing, even when I surprised it at one of those small water-holes that are frequently met with in the beds of rivers during droughts, instead of attempting to escape by flight, it would immediately dive and remain submerged for a great length of time, merely rising to the surface at long intervals for the purpose of breathing. It would seem that neither large sheets of water nor reaches of rivers are necessary for the well-being of this species, for I often met with it on the smallest water-holes, where it lives a solitary life, and allows no other species to share with it the small amount of animal life which is found in such places ; and I quite agree with Lieut. Breton, R.N., who says "he has never heard of any instance in which more than two were seen together. It is extremely difficult to shoot, on account of the readiness with which it dives ; the instant the trigger is drawn, the bird is under water. The chief food of the Musk-Duck is mussels, leeches, and aquatic worms. In Western Australia it is said to leave the rivers in August, and to take up its abode for the purpose of breeding in the numerous lakes which stretch along parallel to the coast ; a precaution probably taken for the better protection of the eggs, which would become an easy prey to the natives and colonists, were the task of incubation performed on the banks of the narrow rivers and pools ; besides which, the lakes not being subject to

the sudden rising of the water which always occurs in the rivers after rain, the birds are thus secured from this among other dangers : the nest, which is placed either on the stump of a low tree or on the bank about two feet above the level of the water, is formed of dried reeds, and lined with feathers and down plucked by the bird from its own breast ; the eggs are of a large size, usually two in number and of a uniform pale olive, three inches long by two broad.

The young birds if pursued while on the water mount on the back of their parent, who immediately dives with them to a place of safety ; just as Grebes do when any danger threatens them.

During the pairing- and breeding-season, which is in the months of September and October, this bird emits a strong musky odour, which is often perceptible long before it can be seen, and this odour is retained for years afterwards in the skins of specimens killed during that particular season.

Its note is extremely singular, resembling the sound caused by a large drop of water falling into a deep well ; or it may be imitated by the sudden opening of the lips.

A most remarkable difference exists in the relative size of the sexes, the bulk and admeasurements of the female being not more than half of those of the male, who alone possesses the wattle under the throat, the use of which I could not detect.

The male has the crown of the head and the back of the neck brownish black ; the remainder of the upper surface, chest and flanks blackish brown, crossed by numerous narrow freckled bars of buffy white ; wings and tail blackish brown ; throat and under surface dark brown, each feather tipped with pale buffy white ; irides dark brown ; bill and lobe beneath the chin greenish black ; legs and feet dark leaden grey ; inside of the tarsi greenish grey.

The female is similar in colour, but has all the markings lighter and less distinct, and is destitute of the lobe beneath the chin.

Family LARIDÆ.

The Gulls are birds of the sea-shores rather than of the open ocean; they are of a wandering disposition, and wing their way up and down the beach in search of stranded mollusks and garbage; they also frequent oozy sand-flats where they obtain salt-water worms, &c. The family comprises numerous species, which have been divided into many genera in accordance with the differences in their structure, mode of life, and nidification. They have an elegant carriage, and swim well; but their dense and soft plumage is unsuited to immersion, and consequently they seldom seek their food beneath the surface. At the breeding-season they are strictly gregarious; some construct their nests on rocks, while others assemble in vast multitudes and resort for this purpose to rivers and inland waters. Usually the sexes are alike in colour, but the whole of them are subject to seasonal changes of plumage; some of the genera, as the black-headed Gulls are remarkable in this respect, for their heads are black during summer only.

Genus LARUS, *Linnæus*.

The members of this genus are distributed over the sea-shores of every part of the globe. Only one species inhabits Australia, to which country it is confined, and where it represents the *Larus marinus* of Europe and America.

With reference to the species of this form, Macgillivray remarks, "They have a strong, buoyant flight, performed by slow beats of their long, extended, arched wings, walk and run with short steps, emit a loud, clear, or harsh cry, and a succession of short sounds resembling a laugh. They perform a singular action with their feet upon the sands, patting them repeatedly with considerable celerity, and at the same time retiring backwards. Their food consists of fish, flesh of dead

cetacea, and land quadrupeds, young sea-birds, crustacea, mollusks, asteriæ, worms, and larvæ. In stormy weather they often leave their ordinary haunts and proceed inland to pick up the larvæ and worms exposed by the plough or found in the pastures. In winter they congregate in large flocks at the mouths of rivers or on the sands. They rest by day either on shore or floating on the water, by night on the sands or rocks, or in the fields, either standing on one foot, with retracted neck, or lying down. In the breeding-season they generally keep in flocks, nestling on rocks, headlands, or islands."

Sp. 596. *LARUS PACIFICUS*, *Lath.*

PACIFIC GULL.

Larus pacificus, *Lath. Ind. Orn., Supp. p. lxviii.*

Pacific Gull, *Lat. Gen. Syn. Supp., vol. ii. p. 332.*

Larus leucomelas, *Vieill. 2nde édit. du Nouv. Dict. d'Hist. Nat., tom. xxi. 509.*

—— *frontalis*, *Vieill. 2nde édit. du Nouv. Dict. d'Hist. Nat., tom. xxi. p. 505 ?*

—— *georgii*, *King, Survey of the Intertropical Coast of Australia, vol. ii. p. 423.*

Gabianus georgi, *Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.*

Nga-ga-la, *Aborigines of the lowland districts of Western Australia.*

Larger Gull of the Colonists.

Larus pacificus, *Gould, Birds of Australia, fol., vol. vii. pl. 19.*

The *Larus pacificus*, which differs from every other species I am acquainted with in the deepened form of the bill and in the pearly whiteness of the irides, is abundantly dispersed over all the shores of Tasmania, the islands in Bass's Straits, and the southern parts of the Australian continent. It ascends high up the larger rivers and arms of the sea, but is never, so far as I am aware, seen in the interior of the country. It is very powerful on the wing, often mounts high in the air, and soars in circles after the manner of the Eagle ; in this particu-

lar habit, and in its less laborious flight, it differs considerably from its prototype, the *Larus marinus* of Europe, while in most other parts of its economy it as closely assimilates to it. It traverses the line of coast in search of food, which consists of any stranded carrion or floating animal substance, to which living fish, crabs, mollusks, and even small quadrupeds are added whenever opportunities occur.

This fine Gull breeds on most of the low islands round Tasmania; the eggs, which are generally three in number, being usually placed on the bare ledges of rock, although not unfrequently on the shore of the projecting points of small islands. They are of a clear olive, marked all over with blotches of blackish and umber brown, some of the markings appearing as if beneath the surface of the shell; they are two inches and five-eighths long by one inch and seven-eighths in breadth.

When fully adult, the sexes can only be distinguished by the smaller size of the female; the young, on the contrary, for at least two years, differ very considerably like the youthful birds of the other species of the genus; the mottled brown of this state, however, may frequently be seen gradually changing to the colouring of the adult, as may also the hues of the eye, bill, and legs, which gradually change with the plumage.

Head, neck, upper part of the back, all the under surface, upper and under tail-coverts white; back and wings dark slaty black, the secondaries largely tipped with white; primaries black, the innermost slightly tipped with white; tail white, the inner web of the outer feather and both webs of the remainder crossed near the tip with a broad band of black; irides pearl-white; legs yellow; claws black; eyelash yellow; bill orange stained with blood-red at the tip, in the midst of which in some specimens are a few blotches of black.

The young have the general plumage brown, with lighter margins to the feathers, giving them a mottled appearance;

under tail-coverts nearly white ; primaries and tail blackish brown ; irides brown ; bill yellowish brown, deepening into black at the tip.

Genus BRUCHIGAVIA, *Bonaparte*.

A genus of Gulls, the members of which are delicate in their structure, elegant in their appearance, and graceful in all their actions. One species is said to inhabit Brazil, another Otaheiti, and two Australia.

In habits, economy, and general appearance the members of this genus are very similar to the *Chroicocephalus ridibundus* of Europe, but at no season do they obtain any dark or black colouring on the head.

Sp. 597. BRUCHIGAVIA JAMESONII.

SILVER GULL.

Crimson-billed Gull, Lath. Gen. Hist., vol. x. p. 145.

Larus jamesonii, Wils. Ill. Zool., pl. 23.

—— *scopulinus*, Forst. Drawings, tab. 109, very young.

—— *novæ-hollandiæ*, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 196.

Silver Gull, Ewing, List of Birds in Tasmanian Journal, vol. i. p. 58.

Gelastes jamesoni, Bonap. Compt. Rend. de l'Acad. Sci., tom. 41.

Bruchigavia jamesoni, Bonap. Comp. Gen. Av., tom. ii. p. 228 ; *Bruchigavia*, sp. 3.

Djé-je-nup, Aborigines of the lowland districts of Western Australia.

Little Gull of the Colonists of ditto.

Xema jamesonii, Gould, *Birds of Australia*, fol., vol. vii. pl. 20.

This beautiful species of Gull is abundantly dispersed over the sea-shores of Tasmania and the southern coasts of Australia generally ; it also frequents the rivers and inland lakes wherever they occur of any extent. Like the other *Bruchigaviæ* it frequently congregates in immense flocks, and colonies of many hundreds have been found breeding together, some-

times on the marshes, at other times on the low small islands; a colony of this kind existed on Great Actæon Island in D'Entrecasteaux's Channel when I visited it in 1838.

The flight of this little Gull is light and buoyant in the extreme, it runs over the surface of the ground with lightness and great facility, and is altogether one of the most beautiful and fairy-like birds I have ever met with.

Its nest is formed of a few rushes and grasses, and it lays four or five eggs, which differ considerably in colour, hardly any two being alike; the ground colour varying from pale greenish to dark brownish olive; in some instances slightly, in others largely blotched and streaked with blackish brown; they also vary in shape, some being shorter and thicker than others.

The two sexes are precisely alike in colour, and may be thus described:—

Head, neck, all the under surface, spurious wing, rump, and tail white; back and wings delicate grey; primaries white, eccentrically marked with black, largely on their inner and narrowly on their outer webs, and largely tipped with the same hue, with a slight fringe of white at the extremity; eyelash, bill, legs and feet deep blood-red; nails black; irides pearl-white.

Sp. 598. BRUCHIGAVIA GOULDI, *Bonaparte*.

GOULD'S SILVER GULL.

Larus novæ-hollandiæ, var., Blyth, Cat. of Birds in Mus. Asiat. Soc., p. 289.

Gavia jamesoni et gouldi, Bruch.

Gelastes gouldi, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Bruchigavia gouldi, Bonap. Comp. Gen. Av., tom. ii. p. 228; *Bruchigavia*, sp. 2.

This is the bird spoken of in the folio edition as being from Torres Straits, and larger in all its admeasurements than the *B. jamesoni* of the south coast. My view of its being speci-

fically distinct has been followed by Bonaparte in his minute subdivision of the Laridæ. Like the *B. jamesoni*, this bird has a white head and white eyes at all seasons.

Genus STERCORARIUS, *Brisson*.

The seas of the higher latitudes of both the northern and southern hemispheres are frequented by parasitic Gulls, but they are more numerous in the former than the latter.

One species only of this form has been found in Australia.

Sp. 599. STERCORARIUS CATARRHACTES.

GREAT SKUA.

Larus catarrhactes, Linn. Syst. Nat., tom. i. p. 226.

—— *fuscus*, Briss. Orn., tom. vi. p. 165.

Lestris catharactes, Ill. Prod. Syst. Mamm. et Av., p. 273.

Catharacta skua, Brünn. Orn. Bor., no. 125.

Cataractes vulgaris, Flem. Edinb. Phil. Journ., vol. i. p. 97.

Catarractes skua, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 215.

—— *noster*, Sibb. Scot. Illust., vol. ii. p. 20, pl. 14. fig. 1.

Stercorarius catarrhactes, Gray, Gen. of Birds, vol. iii. p. 663; *Stercorarius*, sp. 5.

Lestris antarctica, Less. Traité d'Orn., p. 616.

Megalestris catarractes, Bonap. Consp. Gen. Av., 1856, p. 206.

Port Egmont Hen, Hawks. Voy., vol. ii. p. 283.

Skua Gull of British Authors.

Lestris catarractes, Gould, Birds of Australia, fol., vol. vii. pl. 21.

Every voyager to and from Australia, whether by the Cape of Good Hope or Cape Horn, will observe that in all the higher latitudes the ship will be frequently visited by solitary examples of this Gull, which may be distinguished from the Albatroses and Petrels by its more flapping and heavier mode of flight, and by the white mark on the wing, which shows conspicuously when seen from beneath; it appears, however, to be attracted to the ship more from curiosity than from aught

else, for after passing round it two or three times, it wings its way again over the expansive ocean until lost to sight; it is as often seen a thousand miles from land as it is near the coast, and I was for a long time surprised how a bird of this family could exist so far from any apparent means of repose, until the difficulty was at last solved by my seeing the bird settle on the masses of sea-weeds which here and there float about in all seas, and on which it rested with as much ease as if standing on a rock. So little difference is observable between the examples of the Southern Ocean and those found in our own seas, that I have been compelled to consider them to belong to the same species. It was nowhere more abundant than off the coast of Tasmania, and may be frequently seen in Storm Bay at the mouth of the Derwent; it may also be seen off New Zealand and all similar latitudes round the globe; and that it also visits higher latitudes is evidenced by a note with which I have been favoured by R. McCormick, Esq., Surgeon R.N., wherein he states that it is found as far south as Kerguelen's Land and Campbell Island.

In a letter from Mr. Macgillivray, dated on board H.M.S. Rattlesnake, Feb. 6, 1848, that gentleman says, "The *Stercorarius catarrhactes* was noticed on various occasions in different parts of the South Indian Ocean; while off the Cape of Good Hope a solitary individual and subsequently two in company were seen. I have observed it following and hovering over a bait towing astern, and once saw it chase a Cape Petrel and force it to alight on the water. This bird seldom remained with us for more than half an hour at a time, during which it made a few circular flights about the ship."

Captain F. W. Hutton in his notes on some of the birds inhabiting the Southern Ocean, published in the 'Ibis' for 1865, p. 276, says:—"This bird does not skim over the water like the Petrels, but flies low with a heavy slow flapping of its roundish-looking wings, and is therefore easily recognized. It is rare at sea north of latitude 45° S., one

individual only having come under my observation. It is, however, very numerous on the Prince Edward Islands and Kerguelen's Land, where it breeds on the low flats among moss and grass two or three feet high, making no nest, but laying three brown, dark-spotted eggs on the ground. The young birds are dark brown mottled with white. During the breeding-season the old birds are very fierce, flying round the head of an intruder, dashing every now and then at him, and making at the same time a curious croaking noise in their throats."

According to Mr. Alfred Newton, the Great Skua is common along the coasts of Iceland. Faber says it is resident, and mentions four breeding-places in the south. As Dr. Krüper saw it in the north, it probably breeds there also. In Scandinavia it is accounted rare, and it is doubtful if it breeds there; Mr. Newton does not recollect seeing it more than once during three voyages along the coast of Norway. It is not found in Spitzbergen, and although Von Baer includes it among the birds of Nova Zembla, I am inclined to think he is in error. It is utterly unknown on the coasts of Siberia. The Western or Californian coast is said to be its only habitat in America. In all the situations above-mentioned, whether the bird be at sea or on the grass-covered bleak islands on which it breeds, its presence is soon made known by its daring spirit during the breeding-season; it is said that every animal is savagely attacked that approaches too near its nest, and that the Eagle and the Great Gull speedily scurry away, should they have ventured within its precincts.

I may mention that all the specimens from the southern hemisphere are rather darker in colour and somewhat larger in size than those from the northern. I observed no difference in the colouring of the sexes, which may be thus described:—

All the upper surface blackish brown, the feathers of the back with whitish shafts and tips; all the under surface chocolate-brown; base and shafts of the primaries white.

Family STERNIDÆ.

The members of this aërial group of sea-birds I consider to be deserving of a family designation, for the species are very numerous and constitute many genera. They are dispersed over all the sea-girt lands of the globe, and their range may therefore be said to be universal, or if there be any exception it is only near the poles. Australia is well represented in this group, for nearly twenty species pertain to her fauna, and doubtless others will yet be discovered.

Genus SYLOCHELIDON, *Brehm*.

A single species of this form inhabits Australia ; the same bird is also found in India and Europe. It is the largest and most powerful member of the family.

Sp. 600. SYLOCHELIDON CASPIA.

CASPIAN TERN.

Sterna tschegrava, Lepechin, Nov. Com. Pet., tom. xiv. p. 500.

—— *caspia*, Pall. Nov. Com. Pet., tom. xiv. p. 582.

Thalasseus caspius, Boie, Ibis, 1822, p. 563.

Hydroprogne caspia, Kaup, Sk. Ent. Eur. Thierw., 1829, p. 91.

Helopus caspius, Wagl. Isis, 1832, p. 1224.

Sylochelidon caspia, Brehm. Handb. der Nat. Vög. Deutschl., p. 770.

Sterna megarhynchos, Mey. Taschen. Deuts., tom. ii. p. 457.

—— (*Sylochelidon*) *strenuus*, Gould in Proc. of Zool. Soc., part p. .

Sylochelidon strenuus, Gould, *Birds of Australia*, fol., vol. vii. pl. 22.

The *Sylochelidon caspia* frequents Southern Europe, India, Africa, and all the shores of Australia, but is perhaps more numerous on the islands in Bass's Straits and Tasmania than elsewhere. Its favourite breeding-places are the promontories of small islands, spits of land running out from the shores of

the mainland, extensive flats at the entrances of large rivers and all similar situations. I never observed it breeding in company, and seldom met with more than a pair on an island, unless it was one of considerable extent. It lays two eggs on the bare ground, often within a very short distance of the water's edge. No bird watches its eggs with greater assiduity, or defends them with greater courage, and woe betides the unlucky Gull or other natural enemy that may wander within the precincts of its breeding-place. I could always discover its eggs by the clamorous, cackling, screeching note which it constantly utters while flying over the place where they were deposited. The breeding-season comprises the months of August, September, and October, during which period the crown of the head is of a deep black hue, which gives place to a spotted appearance at other seasons. Both sexes are subject to precisely the same changes, and so much are they alike, that it is only by the somewhat smaller size of the female that they can be distinguished. The extensive development of the wings gives this fine species immense powers of flight; it also plunges into the water with the greatest impetuosity, and brings from beneath the surface fishes of a very considerable size.

The eggs are of a stone-colour, marked all over with large and small blotches of umber-brown, a great portion of which appear as if beneath the surface of the shell; they are about two inches and five-eighths long by one inch and three-quarters broad.

Forehead, crown, and nape deep glossy black; back, wings, and tail pale ashy grey, becoming lighter on the tail and deepening into dark grey on the primaries, the shafts of which are white; remainder of the plumage pure white; irides black; bill scarlet, stained with yellow on the sides and tip.

Total length $20\frac{1}{2}$ inches; bill 4; wing $16\frac{1}{2}$; tail $6\frac{1}{2}$; tarsi 2.

Genus THALASSEUS, *Boie*.

The members of this genus, the type of which is the *T. cantiacus* of the British Islands, are widely dispersed over most parts of the Old World, and three distinct species inhabit Australia.

Sp. 601. THALASSEUS CRISTATUS.

'TORRES' STRAITS' TERN.

Caspian Tern, var. B., Lath. Gen. Syn., vol. vi. p. 351.

Crested Tern, Lath. Gen. Hist., vol. x. p. 101.

Sterna cristata, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 146.

—— *pelecanoïdes*, King's Survey of Intertropical Australia, vol. ii. p. 422.

—— *velox*, Rüpp. Atl. zu der Reise Nörd. Afrika, pl. 13.

Pelecanopus pelecanoïdes, Wagl.

—— *pelecanoides*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Gerra-gerra, Aborigines of New South Wales.

Kal-j'eer-gang, Aborigines of the lowlands of Western Australia.

Yellow-billed Tern of the Colonists.

Thalasseus pelecanoides, Gould, Birds of Australia, fol., vol. vii. pl. 23.

This Tern I believe to be the bird described by Capt. King as *Sterna pelecanoïdes*, as it is the only large species of the family inhabiting Torres' Straits. Captain King's description was doubtless taken either from an immature bird or one in the winter plumage. It differs from *Thalasseus poliocercus* in its much larger bill and in being a much stouter bird; it is however most nearly allied. I have received specimens and eggs from Port Essington, and also from Rottnest Island off the western coast of Australia, where Gilbert found the bird breeding in great numbers on an isolated rock about two hundred yards from the mainland. It also attracted the notice of Mr. Macgillivray while cruising in Torres' Straits, and it is to him that I am indebted for the following information as to its range, &c. :—"This handsome Tern, which supplies the place

of the *Thalasseus poliocercus* upon the north-east coast, is generally distributed from Lizard Island to the southward as far northward as Bramble Quay, and is also to be found in Endeavour Straits. It was breeding on Lizard Island in the beginning of May, and on Raine's Island in June, when both eggs and young birds were procured; in the latter locality I found it in three small parties upon a low ridge on one side of the island, depositing its single egg in a slight hollow scooped out of the ground in a bare smooth spot surrounded with herbage. This bird was so much more shy than the Sooty Tern and Noddy, that I was obliged to resort to the gun to procure specimens, as it would not allow me to approach sufficiently near to throw a short stick with effect. The eggs vary considerably in their markings; the ground-colour is generally stone-grey, in some instances thickly speckled and blotched with black; others are marked with irregular waved streaks and minute spots of dark brown; others again with scattered irregular streaks and spots of black; some are thickly blotched, especially at the larger end, with reddish, and others are finely blotched and streaked with dark red on a light pinkish-grey ground; they also vary somewhat in size, but they usually average two inches and three-eighths in length by one inch and a half in breadth." I possess one which differs both in size and colouring, being considerably larger and of a rich reddish buff, blotched all over, but particularly at the larger end, with brownish black, and others in which the streaks assume the appearance of Chinese characters.

Crown of the head and occipital crest jet-black; forehead, sides, and back of the neck, and all the under surface silky white; back, wings, and tail dark grey, deepening into black on the edges and tips of the primaries, the shafts of which as well as those of the tail are white; bill pale greenish yellow; irides very dark brown; legs and feet black; soles dirty brownish yellow.

Young birds have the grey of the upper surface much paler, and the black of the head mottled with white.

Sp. 602. **THALASSEUS POLIOCERCUS**, *Gould*.

BASS'S STRAITS' TERN.

Sterna poliocerca, Gould in Proc. of Zool. Soc., part v. p. 26.

Sylochelidon poliocerca, List of Birds in Brit. Mus. Coll., part iii. p. 175.

Pelecanopus poliocercus, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Thalasseus poliocercus, Gould, *Birds of Australia*, fol., vol. vii. pl. 24.

No species of Tern is so abundant on the shores of Tasmania and New South Wales during the months of winter as the present bird, which then inhabits the bays and inlets of the sea, and ascends high up the rivers in flocks of from ten to fifty in number, for the purpose of securing the abundant supply of food afforded by the shoals of fish which there abound; at this season of the year the heads of all are mottled with black and white, a style of plumage which gives place to an intensely jet-black hue in summer: the only part of Australia from which I have received specimens in this latter state is Port Lincoln, where both sexes and the eggs were procured, and sent to me by my late friend J. B. Harvey, Esq.

This bird is about the size of, or perhaps rather larger than the Kentish Tern of England, and has many habits in common with that species.

The eggs vary considerably in colour, some being of a stone-grey and others of a buffy hue, all more or less marked with brown, the markings in some being large and irregular blotches, in others streaks and spots, in others in the form of Chinese or Hindustanee characters; others again are freckled and blotched all over with brown; and some have the markings so thick at the larger end that they blend into each other and form a broad zone.

Crown of the head and occipital crest jet-black; forehead,

back of the neck, and all the under surface silky white ; back, wings, and tail grey ; secondaries tipped with white ; shafts of the wings and tail white ; bill yellow ; irides black ; legs and feet brownish black.

Total length $17\frac{1}{2}$ inches ; bill $2\frac{3}{4}$; wing $12\frac{3}{4}$; tail 7 ; tarsi 1.

Sp. 603. THALASSEUS BENGALENSIS.

INDIAN TERN. •

Sterna media, Horsf. ?

—— *bengalensis*, Less.

—— *affinis*, Rüpp. ?

Thalasseus torresii, Gould in Proc. of Zool. Soc., part x. p. 140.

Pelecanopus torresi, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Mair-id-bo, Aborigines of Port Essington.

Thalasseus torresii, Gould, Birds of Australia, fol., vol. vii. pl. 25.

In the collection formed by Gilbert at Port Essington were two examples of this species, respecting which he says, "This bird is numerous on all the sandy points in the harbour as well as all round the coast and the neighbouring islands ; and I am informed that it breeds on the sandy islands during the months of April and May : " beyond this I have no information to communicate, except that I possess examples killed at Madras, in the East Indies, whence I infer that its range extends from thence throughout the islands of the Eastern Archipelago to the northern coasts of Australia. It is intimately allied to the *Thalasseus cristatus* and *T. polio-cercus*, which it doubtless resembles in its general habits and nidification.

The stomach is membranous, and the food consists of fish.

The sexes are alike in plumage ; in summer the forepart of the head is black, while in winter it is white.

Forehead, sides of the face and neck, upper part of the back, and all the under surface silky white ; feathers of the crown and surrounding the eye white, with a minute spot of

black in the centre of each ; occiput and back of the neck black ; back and wings deep grey ; tail grey ; primaries greyish black, broadly margined on their inner web with white ; the shafts white ; irides dark brown ; bill ochre-yellow ; feet blackish grey.

Total length $13\frac{1}{2}$ inches ; bill $2\frac{3}{4}$; wing $11\frac{1}{2}$; tail $4\frac{3}{4}$; tarsi 1.

Genus STERNA, *Linnaeus*.

The members of this genus, as now restricted, enjoy so wide a range over the seas of the globe, that they may be said to be universally dispersed : three species are found in Australia.

Sp. 604. STERNA MELANORHYNCHA, *Gould*.

SOUTHERN TERN.

Sterna velox, Gould in Proc. of Zool. Soc., part x. p. 139.

—— (*Thalassea*) *melanorhyncha*, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Sterna melanorhyncha, Gould, *Birds of Australia*, fol., vol. vii. pl. 26.

I killed several fine examples of this Tern off the coast of Tasmania, and within a few miles of Maria Island : all the specimens I procured had the forehead white, a character of plumage which I have since ascertained to be indicative of the winter dress.

More recently I have received from Mr. Macgillivray specimens which I consider to be fully adult examples of this bird in their summer or breeding-costume ; in this state the crown of the head is wholly black, the bill in some specimens red, in others red stained with black on the upper mandible ; legs orange-red ; the upper and under surface dark blue-grey, except a line of snow-white running along the face, below the eye, and separating the grey of the throat from the jet-black

crown ; rump, upper tail-coverts, and tail white, except the outer feathers of the latter, which are washed with grey. This bird nearly resembles the *S. cassinii* of the Falkland Islands ; but differs in its darker colouring and its much smaller size.

The specific term *melanorhyncha* applied to the young of this species being a very inappropriate designation for a bird which in its adult state has a red bill, I would therefore suggest that it be called *Sancti-pauli*.

An egg of this species, sent by Mr. Macgillivray from St. Paul's Island, is very like some of the dark varieties of the Common Tern of Britain (*Sterna hirundo*). The ground colour being olive-brown, blotched and marked all over, but particularly at the larger end, with rich umber, intermingled with obscure markings of grey, the latter appearing as if beneath the surface of the shell. The length is $1\frac{3}{4}$ inch, the breadth $1\frac{1}{8}$.

The sexes do not differ from each other in external appearance.

Forehead, lores, sides of the neck, and all the under surface white ; space surrounding the eye, occiput, and back of the neck black ; all the upper surface, wings, and tail delicate grey ; outer web of the external quill greyish black ; shafts of all the primaries white ; irides blackish brown ; bill black.

Total length 13 inches ; bill $2\frac{1}{8}$; wing $9\frac{3}{4}$; tail $6\frac{1}{4}$; tarsi $\frac{3}{4}$.

Sp. 605. STERNA GRACILIS, *Gould*.

GRACEFUL TERN.

Sterna gracilis, Gould, *Birds of Australia*, fol., vol. vii. pl. 27.

This graceful and elegant Tern was killed by Gilbert on the Houtmann's Abrolhos, off the western coast of Australia, where he states it is very numerous, continually moving about from one part of those islands to another, and settling during the heat of the day on the coral ridges in large flocks. He was informed that it breeds there in great numbers during the month of November, but he was unfortunately too late to

procure its eggs, which are said to be two in number, and to be deposited on the ground in a slight hollow among the loose coral ridges.

I regret to say that to this meagre account I have nothing to add, as I did not meet with the species myself, neither have I seen or received specimens from any other locality.

Crown of the head and back of the neck rich deep black; all the upper surface, wings, and tail silvery grey; sides of the neck and all the under surface white, with a bluish of rose-colour on the breast and centre of the abdomen; shafts of the primaries white, their outer webs slaty black, and a narrow stripe of dark slate-colour along the inner web close to the stem; irides brownish red; bill red; feet orange-red; nails black.

Sp. 606. STERNA MELANAUCHEN, *Temm.*

BLACK-NAPED TERN.

Sterna melanauchen, Temm. Pl. Col., 427.

— *sumatrana*, Raff.

Sternula melanauchen, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Sterna melanauchen, Gould, *Birds of Australia*, fol., vol. vii. pl. 28.

Although this species has been figured by Temminck in his valuable "Planches Coloriées," it becomes necessary to include a description of it in the present work, in consequence of its being a frequent visitor to the northern shores of Australia. Lesson states that it is found in the Celebes and on most of the Moluccas; and there is but little doubt that its range extends over the whole of the Indian Archipelago. It is about the size of the Common Tern (*Sterna hirundo*) of Europe, is one of the most beautiful species yet discovered, and is distinguished from all the other members of its genus by the snowy whiteness of its crown, and by the deep gorget-shaped black mark at the occiput.

“This beautiful bird,” says Mr. Macgillivray, “is very local in its breeding-places, the only one known to me being one of the ‘three sand-banks’ near Sir Charles Hardy’s Islands. The eggs are two in number, deposited in a slight hollow in the sand. I have seen this bird on another neighbouring sand-bank, also on Solitary Island, near Cape York, and in Endeavour Straits, but was unable to procure a specimen from any of the last-mentioned localities, on account of its excessive shyness. It is one of the most noisy of the Terns, and I generally saw it in small parties of half-a-dozen, or thereabouts. The fully-fledged young of the year differs from the adult in having the black on the head dark brown mottled with white, and the whole of the upper surface and wings variegated with dark brownish grey.”

According to Mr. Jerdon, the range of the *Sterna melan-auchen* extends throughout the Malayan Peninsula to the Bay of Bengal, and it is said that it breeds on the Nicobar Islands.

The plumage of the young bird being mixed with blackish brown above shows, says Mr. Blyth, an affinity to the members of the genus *Onychoprion*.

So far as I have been able to ascertain, there appears to be no outward difference in the sexes; I have never seen examples in any other than the adult plumage here represented; but, judging from analogy, we may reasonably infer that this species undergoes changes similar to those of the other members of the family, and consequently that at some seasons of the year the black mark at the occiput is far less brilliant than at others.

Crown of the head, neck, and under surface white, with a faint tinge of rose-colour on the breast; lores and a gorget-shaped mark commencing immediately behind the eye and spreading over the nape black; upper surface, wings, and tail delicate silvery grey, with white shafts; outer web of the external primary black; bill black; feet brownish black.

Genus STERNULA, *Boie*.

Europe and Australia are both tenanted by Little Terns, the specific distinctness of which cannot be questioned. They are very fairy-like birds, and differ somewhat in their habits from the true Terns.

Sp. 607. STERNULA NEREIS, *Gould*.

LITTLE TERN.

Sternula nereis, Gould in Proc. of Zool. Soc., part x. p. 140.

Little Tern, Colonists of Western Australia.

Sternula nereis, Gould, *Birds of Australia*, fol., vol. vii. pl. 29.

This delicately coloured and elegant Little Tern inhabits many of the low sandy islands in Bass's Straits, whence its range extends along the south coast to Western Australia. I observed several pairs on the small island opposite the settlement on Flinder's Island, where they appeared to be breeding. It would seem, however, to be much more numerous on the western coast, and during the month of December congregates in immense flocks on Rottnest and Garden Islands. It makes no nest, but lays its two eggs in a depression on the sand or shingle. Like that of other Terns, the food of this species principally consists of the smaller oceanic fishes, which it captures with apparent ease, plunging down into the water from a considerable height with such unerring aim that it rarely misses the object.

The *Sternula nereis* is a beautiful representative in the southern ocean of the Little Tern of the European seas, the habits, actions, and economy of both being precisely alike.

The eggs are two in number, of a pale stone-colour, in some instances marked all over, but more thickly at the larger end, with dark umber-brown; in others very largely blotched with the same colour; they are one inch and three-eighths long by seven-eighths broad.

Crown of the head, back of the neck, circle round and a spot before the eye black; forehead white; back and wings delicate silvery grey; outer web of the external primary dark grey at the base, gradually passing into light grey at the tip; all the under surface, rump, and tail pure white; irides black; bill, tongue, and feet rich orange yellow.

Total length $10\frac{1}{2}$ inches; bill $1\frac{3}{4}$; wing $7\frac{1}{2}$; tail $4\frac{1}{4}$; tarsi $\frac{9}{18}$.

Genus GELOCHELIDON, *Brehm*.

The Gull-billed Tern of the British Islands (*Gelochelidon anglica*) is a typical example of this genus. The form also occurs in America, and in Australia.

Sp. 608. GELOCHELIDON MACROTARSA, *Gould*.

LONG-LEGGED TERN.

Sterna macrotarsa, Gould in Proc. of Zool. Soc., part v. p. 26.

Gelochelidon macrotarsa, Gould, *Birds of Australia*, fol., Supp., pl.

Many years have elapsed since a small collection of Australian birds was sent to the Council of King's College, London, as a donation to their museum. In this collection was a fine species of Tern, which proved to be new to science, and of which I published, in 1837, a full description, together with its admeasurements, under the name of *Sterna macrotarsa*. In the interval between 1837 and 1865, I have only seen two other examples; it is evident, therefore, that the bird is extremely rare, or that no collector has visited its true habitat. One of the two specimens referred to was procured by the late Mr. Elsey on the Victoria River in North-western Australia, and is now in the British Museum; the other was obtained at Moreton Bay. The *Gelochelidon macrotarsa* is considerably larger in all its admeasurements than the Gull-billed Tern of Europe, to which species it is nearly allied, and of which it is evidently the representative on the Australian

continent. One of the principal features which distinguishes the Australian bird from its northern representative is its light and silvery coloured back and wings; it has also a much stouter and longer bill, as well as longer and larger legs.

I have at this moment before me, for the purpose of comparison, beautiful skins of the *G. anglica*, collected by Osbert Salvin, Esq., in Algeria; one from the continent of India, and another from Java: all these are as nearly alike as possible in colour and admeasurements; it is evident, therefore, that the European and Indian birds are of the same species.

In summer the crown of the head and back of the neck are black; all the upper surface and primaries are light silvery grey; the remainder of the plumage is white; and the bill and feet are black.

In winter the black colouring of the head probably disappears and is replaced by white.

Total length 17 inches; bill $2\frac{1}{4}$; wing $13\frac{3}{4}$; tail 6; tarsi $1\frac{5}{8}$.

Genus GYGIS, *Wagler*.

One species of this genus of Terns is found in Australia. Little is known respecting it or its allies, all of which frequent the South Indian Ocean and the seas of Polynesia and Australia.

Mr. G. R. Gray remarks, in his 'Catalogue of the Birds of the Tropical Islands of the Pacific Ocean in the Collection of the British Museum,' that "the late Prince Bonaparte gives three species of this form in the 'Comptes Rendus de l'Académie des Sciences' for 1856, p. 773, viz. *Gygis alba*, Sparrm., *G. candida*, Forst., and *G. napoleonis*, Pr. B.; but I have not met with any characters by which he distinguishes them from one another."

The birds of this genus appear to deposit their single egg on the branches of trees.

Sp. 609.

GYGIS CANDIDA.

WHITE TERN.

Sterna candida, Forst. Descrip. &c., p. 179.—— *alba*, Lath. Ind. Orn., vol. ii. p. 808 ?*White Tern*, Lath. Gen. Syn., vol. vi. p. 363.*Gygis candida*, Wagl.

Gygis candida, Gould, *Birds of Australia*, fol., vol. vii. pl. 30.

This lovely Tern visits the whole of the south-eastern coast of Australia from Moreton Bay to Cape York, and is also found on Norfolk Island, where it is said to breed.

The late Mr. Cuming informed me that, on his visiting Elizabeth Island, in the South Seas, which is entirely destitute of inhabitants and of fresh water, he found this or an allied species breeding on a species of *Pandanus*, its single egg being deposited on the horizontal branches in a depression, which, although slight, was sufficient to retain it in position despite of the high winds and consequent oscillations to which it was subjected. Mr. Cuming added that the old birds were flying about in thousands, like swarms of bees, and that he noticed several breeding on the same tree; some of the young birds were hatched and covered with down, and being within reach, he took a few of them in his hand, and after examining replaced them on their dangerous resting-place, from which it appeared they occasionally fell down and were destroyed, as he observed several lying dead on the ground.

A bird of this genus, and perhaps the same species, is also noticed in the 'Journal of Researches in Geology and Natural History' of C. Darwin, Esq., who, when speaking of Keeling Island, says, "But there is one charming bird—a small and snow-white Tern which smoothly hovers at the distance of an arm's length from your head; its large black eye scanning with quiet curiosity your expression. Little imagination is

required to fancy that so light and delicate a body must be tenanted by some wandering fairy spirit."

The sexes do not differ from each other in outward appearance.

The entire plumage is snow-white; bill dark blue at the base, black at the tip; irides black; feet orange.

Genus HYDROCHELIDON, *Boie*.

The members of the present genus inhabit inland waters and marshes, make their nests among the rushes, and lay strongly-marked eggs, in which they differ from the other Terns, the generality of which deposit their eggs on the shingles of the sea-shore.

Sp. 610. HYDROCHELIDON LEUCOPAREIA.

MARSH-TERN.

Sterna hybrida, Pall. Zoog. Rosso-Asiat., tom. ii. p. 338.

—— *leucopareia*, Natt., Temm. Man. d' Orn., 2de edit., tom. ii. p. 746.

—— *delamotta*, Vieill. Ency. Méth. Orn., part i. p. 350.

—— *leucogenys*, Brehm.

Viralva leucopareia, Steph. Cont. of Shaw's Gen. Zool. vol. xiii. p. 171.

Hydrochelidon hybrida, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

—— *fluviatilis*, Gould in Proc. of Zool. Soc., part x. p. 140.

Hydrochelidon fluviatilis, Gould, *Birds of Australia*, fol., vol. vii. pl. 31.

The present bird, which I figured and described in the folio edition as *Hydrochelidon fluviatilis*, but which I now believe to be identical with *H. leucopareia* of Europe and India, is a denizen of inland waters rather than those of the sea-coast, and wherever lagoons of any extent have been discovered in the interior of Australia, it has been found enlivening the scene. I frequently observed it in the reaches of the rivers Mokai and Namoi, and both Sturt and Hume mention

it as frequenting many parts of the country visited by them ; I have also seen specimens from Swan River : it is evident, therefore, that it has a wide range of habitat. Its chief food consists of aquatic insects and small fish, which it procures after the usual manner of the Marsh Terns, by hunting with scrutinizing care over the surface of the water.

The breeding-place of this species in Australia has not been discovered, but in its nidification it doubtless closely resembles its congeners, which we know breed among the sedgy herbage, making a nest just above the surface of the water.

“ This Tern,” says Mr. Jerdon, “ is exceedingly abundant in India, frequenting marshes, tanks, and rivers, usually preying on aquatic food, not unfrequently hunting over fields, beds of reeds, and marshy ground, where it captures grasshoppers, caterpillars, and other insects. In some parts of the country it roosts during the night on thick beds of reeds, congregating in vast numbers : for some time after sunset till nearly dark, it may be seen flying in scattered flocks in an excited manner over the surface of the water ; but I do not think that the birds I saw thus occupied were at the same time engaged in capturing food. It breeds in large churrs on the Ganges, and probably on most other large rivers. It is found over the greater part of Europe, temperate Asia, and Africa.

Little or no difference is observable in the sexes.

Forehead, crown, and nape deep black ; all the upper surface, wings, and tail light grey ; sides of the face and the throat white, gradually deepening into grey on the chest, and the grey into black on the abdomen and flanks ; under surface of the shoulder and under tail-coverts white ; irides black ; bill blood-red ; feet light blood-red.

Total length $9\frac{3}{4}$ inches ; bill $1\frac{5}{8}$; wing $8\frac{3}{4}$; tail $8\frac{1}{4}$; tarsi $\frac{7}{8}$.

Genus **ONYCHOPRION**, *Wagler*.

Of this form two species frequent the Australian seas; and one of them appears to be universally distributed over the Pacific, Atlantic, and Indian Oceans.

Sp. 611. **ONYCHOPRION FULIGINOSA.****SOOTY TERN.**

Sterna serrata, Forst. Descr. Anim., p. 276.

—— *guttata*, Forst. Ib., p. 211.

—— *fuliginosa*, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 605.

Onychoprion serrata, Wagl. Isis, 1832, p. 277.

Haliplana fuliginosa, Wagl. Ib., p. 1224.

—— *serrata*, Bonap., Compt. Rend. de l'Acad. Sci., 1856, p. 772.

Sterna oahuensis, Bloxh. Voy. of Blonde, p. 291.

—— (*Onychoprion*) *serrata*, G. R. Gray, Cat. of Birds of Trop. Isl. of Pac. Ocean in Coll. Brit. Mus., p. 59.

Anous l'herminieri, Less. Descr. de Mamm. et d'Ois., p. 255.

Haliplana gouldi, Reich. (Bonap.).

Onychoprion fuliginosus?, Gould, *Birds of Australia*, fol., vol. vii. pl. 32.

This common species appears to be very generally distributed over the seas surrounding Australia, but to be less numerous on the southern than on the western, northern, and eastern coasts. It is now supposed to be the same species which frequents the shores of the countries washed by the Atlantic, both north and south, and that examples from North America and Australia are not different; if this be the case, no bird of its family enjoys so wide a range over the globe. Gilbert found it breeding on the Houtmann's Abrolhos in December, and Mr. Macgillivray in Torres Straits in May and June.

Gilbert states that it "lays a single egg on the bare ground beneath the thick scrub; and that the egg varies considerably

in colour. The breeding-season is at its height in December, but a few may be found performing the task of incubation in January. So reluctant is it to leave its egg or young, that it will suffer itself to be taken by the hand rather than desert them. For several weeks after the young are able to fly, this bird may be seen in vast flocks soaring at a great height. It is an extremely noisy species, and may be heard on the wing during all hours of the night."

"The *Onychoprion fuliginosa*," says Mr. Macgillivray, "was found breeding in prodigious numbers on Raine's Islet and Bramble Key in May and June, associated with Noddies (*Anous stolidus*). The Sooty Tern deposits its solitary egg in a slight excavation in the sand, without lining of any kind. The egg varies considerably in its markings. After the party employed in building the beacon on Raine's Islet had been on shore about ten days, and the Terns had had their nests robbed repeatedly, the birds collected into two or three large flocks, and laid their eggs in company, shifting their quarters repeatedly on finding themselves continually molested; for new-laid eggs were much in request among people who had for some time been living upon ship's fare. By sitting down and keeping quiet I have seen the poor birds dropping their eggs within two yards of where I sat, apparently glad to get rid of their burthen at all hazards. During the month of June 1844 about 1500 dozen of eggs were procured by the party upon the island. About the 20th of June nearly one-half of the young birds (hatched twenty-five or thirty days previously) were able to fly, and many were quite strong upon the wing. Great numbers of young birds unable to fly were killed for the pot: in one mess of twenty-two men the average number consumed daily in June was fifty, and supposing the convicts (twenty in number) to have consumed as many, 3000 young birds must have been killed in one month; yet I could observe no sensible diminution of the number of young, a circumstance which will give the reader some idea

of the vast numbers of birds of this species congregated on a mere vegetated sand-bank like Raine's Islet."

Audubon, in the fifth volume of his 'Ornithological Biography,' states that on the Tortugas this species lays three eggs, and not one only as in Australia; and I may quote the following passage, in confirmation of Mr. Macgillivray, of the immense numbers of these birds which assemble together for the purpose of breeding:—"At Bird Key we found a party of Spanish eggers from Havannah. They had already laid in a cargo of about eight tons of the eggs of the Tern and the Noddy. On asking them how many they supposed they had, they answered that they never counted them, even while selling them, but disposed of them at twenty-five cents per gallon, and that one turn to market sometimes produced upwards of two hundred dollars, while it took only a week to sail backwards and forwards and collect their cargo. Some eggers who now and then come from Key West sell their eggs at twelve and a half cents the dozen. Wherever these eggs are carried they must be disposed of and eaten, for they become putrid in a few weeks."

The ground-colour of the eggs is a creamy white, in some very pale, in others very rich, blotched all over with irregular-sized markings of chestnut and dark brown, the latter hue appearing as if beneath the surface; the lighter-coloured eggs have these markings much smaller and more thinly dispersed, except at the larger end; they are two inches and an eighth long by one inch and a half in breadth.

The colouring of this species is as follows:—

Lores, crown of the head, and back of the neck deep black; all the upper surface, wings, and tail deep sooty black; the apical half, the shaft, and the outer web of the lateral tail-feathers white; a V-shaped mark on the forehead and all the under surface of the wings and body white, passing into grey on the lower part of the abdomen and under tail-coverts; irides dark brown; bill black; feet brownish black.

Sp. 612. ONYCHOPRION PANAYENSIS.

PANAYAN TERN.

Sterna panayensis, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 607.

—— *panaya*, Lath. Ind. Orn., vol. ii. p. 808.

L'Hirondelle de mer de Panay, Sonn. Voy., p. 125. pl. 84.

Panayan Tern, Lath. Gen. Syn., vol. vii. p. 363.

Haliplana panayensis, Bonap. Compt. Rend. de l'Acad. Sci., 1856, p. 772.

Onychoprion panaya, Gould, Birds of Australia, fol., vol. vii. pl. 33.

This bird visits many parts of the coasts of Australia, particularly those of the western side of the continent. It was found on the Houtmann's Abrolhos by Gilbert, who remarks that it commences breeding in the latter part of November, and that during the period of incubation it differs in its habits from all the other allied species, inasmuch as, instead of being gregarious, each pair remains solitary, and its single egg is deposited in the fissure of a rock close to the water's edge without any nest or flooring; he further states that it was very seldom seen at Port Essington, but that a great number flew around the ship during his voyage from thence to Singapore. Mr. Macgillivray informs me that he first met with it on Solitary Island, near Cape York; subsequently it was found on Raine's Islet by the late Commander Ince, R.N., and by himself on Bramble Quay, in Torres Straits, where it was breeding in small numbers, and where it deposits its single egg in the holes of the loose friable coral sandstone; and it was here, while turning over some of the shells of dead turtle which had been apparently arranged by the natives who occasionally visit the place, that he was surprised to find beneath them several of these pretty Terns sitting on their egg without any nest. The egg is so similar in colour to that of the Sooty Tern that the description of one will answer for both, but it is considerably smaller in size, the average measurement being one inch nine and a half lines long by one inch three and a half lines broad.

The stomach is membranous, and the food consists principally of fish.

Forehead, line over the eye, chin, and throat white; lores, crown of the head, and nape black; back, wings, and tail light sooty brown, the outer tail-feather being white at the base and on the outer web for two-third of its length; edge of the shoulder and under surface of the wing white; under surface white, slightly washed with grey; irides blackish brown; bill black; legs and feet blackish green.

Genus ANOUS, *Leach*.

“The Noddies,” remarks Mr. Jerdon, “are well-known oceanic birds, frequenting tropical and juxta-tropical seas. They differ from most Terns in their even or somewhat rounded tails; and still more in the manner of their flight, which is steady and slow. They settle on the water when taking their food, which consists chiefly of mollusks and fatty matter; and they are very silent birds. Sundevall, who noted these differences, states that in their mode of life they resemble Petrels rather than Terns.”

Unlike other Terns which frequent the sea-shores and rivers, the Noddies frequent the wide ocean, far remote from land, and which, like the Petrels, they seldom quit, except at the breeding-season, when they congregate in vast multitudes on small islands suited to the purpose. Great nurseries of this kind are to be found in every ocean; in the North Atlantic, one of the Tortugas, called Noddy Key, is a favourite resort, and the Bahama Islands are another; in the South Pacific and Indian Oceans, beside other situations, the Houtmann's Abrolhos, off the western coast of Australia, and on Bramble Key in Torres Straits, are resorted to in such immense numbers that Mr. Gilbert was perfectly astonished at the multitudes with which he found himself surrounded, upon landing on those remote and little-explored islands.

Sp. 613.

ANOUS STOLIDUS.

NODDY TERN.

Passer stultus, Ray, Syn. 154.*Sterna stolidus*, Lath. Ind. Orn., vol. ii. p. 805.*Gaira fusca*, Briss. Orn., tom. vi. p. 199. tab. 18. fig. 2.*La Mouette brune*, Buff. Pl. Enl., 997.*Noddy Tern*, Lath. Gen. Hist., vol. x. p. 104.*Anous niger*, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 140. pl. 17.*Megalopterus stolidus*, Boie.*Le Noddi noir*, Cuv. Règn. Anim., tom. i. p. 522.*Anous stolidus*, G. R. Gray, List of Gen. of Birds, 2nd Edit., p. 100.—— *leucocephus*, Swains.

Anous stolidus, Gould, Birds of Australia, fol., vol. vii. pl. 34.

If the present bird be identical with the *Sterna stolidus* of the older writers, then the range of the species over the temperate and warmer parts of the ocean must be almost universal; but it will be seen that although the Noddies of the northern and southern hemispheres are very much alike, considerable variation is found to exist in their modes of nidification and the season at which that duty is performed; a difference is also found in the number and colouring of their eggs, those inhabiting the northern hemisphere being said to lay three, and those inhabiting the southern only one. Mr. Coues, after instituting a most careful and minute comparison of the American and Pacific birds, is still undecided as to whether they are or are not different. "If," says he, "the Pacific bird be really distinct, it has probably yet to receive a name, for it is very different from the various species of *Anous* mostly described by Mr. Gould. In that event it may be called *Anous frater*"; but, rather than unnecessarily multiply the number of specific appellations, I prefer for the present at least to describe the Australian bird under the old name of *stolidus*.

"The Noddy and an allied species" (*A. melanops*), says

Gilbert, "are extremely numerous on the Houtmann's Abrolhos, where they breed in prodigious numbers. The present species lays its eggs in November and December, on a nest constructed of sea-weed, about six inches in diameter and varying in height from four to eight inches, but without anything like regularity of form; the top is nearly flat, there being but a very slight hollow to prevent their single egg from rolling off. The nests are so completely plastered with the excrement of the bird, that at first sight they appear to be entirely formed of that material; they are either placed on the ground in a clear open space, or on the tops of the thick scrub, over those of the *Onychoprion fuliginosus*, the two species incubating together with the most perfect harmony, and the bushes presenting a mottled appearance from the great numbers of both species perched on the top: the male *O. fuliginosa* sitting quite close to the nest of the Noddy, while its mate is beneath performing the duties of incubation. On walking among the nests I was surprised to observe the pertinacity with which the birds kept their post; in fact they would not remove from off the egg or the young, but would suffer themselves to be trodden upon or taken off with the hand; and so thickly were the nests placed, that it was no easy matter to avoid crushing either eggs or birds at every step. By the middle of January the eggs were nearly ready to hatch, and there would be an overwhelming increase of this species yearly but for the check which nature has provided against it in the presence of a small lizard which is very abundant about their breeding-places, and which finds an easy prey in the young of this Noddy and of *Onychoprion fuliginosus*. I am satisfied that not more than one out of every twenty birds hatched ever reaches maturity, or lives long enough to take wing; besides which, great numbers of the old birds are constantly killed: these lizards do not eat the whole bird, but merely extract the brain and vertebral marrow; the remainder is however soon cleared off by the *Dermestes larda-*

rius, an insect which occurs in amazing numbers, and gave me a great deal of uneasiness and constant trouble to preserve my collection from their repeated attacks. I did not observe the Noddy on any but the South Island. As it finds an abundant supply of food, consisting of small fish, small mollusca, medusæ, cuttle-fish, &c., immediately outside the outer reef, it has no occasion to go far out to sea ; I never observed it feeding in the smooth quiet water between the outer reef and the islands."

"The large Noddy," says Mr. Macgillivray, "is abundantly distributed over Torres Straits, but I never met with it to the southward of Raine's Islet, on which, as at Bramble Key, it was found breeding in prodigious numbers. Unlike its constant associate, the Sooty Tern, it constructs a shallow nest of small twigs arranged in a slovenly manner, over which are strewn about a handful of fragments of coral from the beach, shells, and occasionally portions of tortoise-shell and bones of turtle. The nest is sometimes placed upon the ground, but more usually upon tufts of grass and other herbage at about a foot from the ground."

I here transcribe Audubon's account of the breeding of the true *Anous stolidus*, as it is not only interesting in itself, but, when coupled with Gilbert's and Macgillivray's observations on the Australian bird, may tend to show that in this, as in many other instances, birds inhabiting opposite sides of the equator have very similar habits ; and whether identical or not, it is somewhat singular that the American Noddy should lay two eggs and the Australian but one.

"The Noddies," says Audubon, "form regular nests of twigs and dry grass, which they place on the bushes or low trees, but never on the ground. On visiting their island on the 11th of May 1832, I was surprised to see that many of them were repairing and augmenting nests that had remained throughout the winter, while others were employed in constructing new ones, and some were already sitting on their

eggs. In a great many instances the repaired nests formed masses nearly two feet in height, and yet all of them had only a slight hollow for the eggs, broken shells of which were found among the entire ones, as if they had been purposely placed there. The birds did not discontinue their labours, although there were nine or ten of us walking among the bushes; and when we had gone a few yards into the thicket, thousands of them flew quite low over us, some at times coming so close as to enable us to catch a few of them with the hand. On one side might be seen a Noddy carrying a stick in its bill, or picking up something to add to its nest; on the other several were seen sitting on their eggs unconscious of danger, while their mates brought them food. The greater part rose on the wing as we advanced, but re-alighted as soon as we had passed. The bushes were rarely taller than ourselves, so that we could easily see the eggs in the nests. . . . The Noddy lays three eggs, which average two inches in length by an inch and three-eighths in breadth, and are of a reddish yellow colour, spotted and patched with dull red and faint purple. They afford excellent eating, and our sailors seldom failed to collect bucketsful of them daily during our stay at the Tortugas."

Considerable variation is found to exist in the markings of the eggs; the greater number are of a cream-colour, thinly sprinkled all over, except at the larger end, where they become more numerous and form an irregular zone, with blotches of chestnut-red and dark brown, the latter colour appearing as if beneath the surface of the shell; but examples occur in which the markings are much more numerous and almost equally distributed over the surface, and others which are nearly pure white; and I possess one specimen in which the markings are so large and dark that it might be readily mistaken for the egg of some other bird. They are two inches in length by one inch and a half in breadth.

The flight of this species is apparently laboured, being per-

formed with a considerable action of the wings ; at the same time the bird is capable of sustaining itself for a long time just above the surface of the water, and of frequently making abrupt and rapid turns while engaged in the search of its prey ; its soft and dense plumage renders it extremely buoyant, and, as the largely-developed membrane of the feet would indicate, it swims with great ease.

The sexes are so nearly alike, that by dissection alone can they be distinguished ; and the young acquire the plumage of the adult at a very early age.

Upper and under surface chocolate-brown ; crown of the head pale grey, gradually blending with the brown of the upper surface ; primaries and tail brownish black ; immediately before and above the anterior angle of the eye a spot of black ; irides brown ; bill black ; feet dull brownish red ; webs dusky ; claws black.

Sp. 614. **ANOUS MELANOPS**, *Gould*.

LESSER NODDY.

Anous — ? (Lesser Noddy), Gould in Proc. of Zool. Soc., part xii. p. 36.

Anous melanops, Gould in Proc. of Zool. Soc., part xiii. p. 104.

Anous melanops, Gould, *Birds of Australia*, fol., vol. vii. pl. 35.

All that has been said respecting the Noddy is equally descriptive of this bird. It is as abundant in Australian seas, and at the breeding-season resorts to similar situations. On the Houtmann's Abrolhos it is even more numerous than the *A. stolidus* ; like that bird, it is truly gregarious, the nests being arranged as closely as possible on the branches of the mangrove, at a height of from four to ten feet above the ground, the sea-weed of which each nest is constructed being merely thrown across the branch, without any regard to form, until it has accumulated to a mass varying from two to four inches in height ; in many instances long pieces of sea-weed hang down

beneath the branch, giving it the appearance of a much larger structure than the reality ; the nests and the branches of the trees are completely whitened with the excrement of the bird, the disagreeable and sickly odour of which is perceptible at a considerable distance. South Island, Houtmann's Abrolhos, appears to be the only one resorted to for the purpose of nidification ; for although large mangroves occur on others of the neighbouring islands, it was not observed on any of them. " I have seen many vast flocks of birds," says Gilbert, " but I confess I was not at all prepared for the surprise I experienced in witnessing the amazing clouds, literally speaking, of these birds when congregating in the evening while they had their young to feed. During their alternate departure and return with food they presented a most singular appearance. From their breeding-place to the outer reef, beyond the smooth water, the distance is four miles ; and over this space the numbers constantly passing were in such close array that they formed one continuous and unbroken line. After the young birds were able to accompany their parents, I observed that they all left the breeding- or roosting-place in the morning and did not again return until evening, the first-comers apparently awaiting the arrival of the last before finally roosting for the night. It is when thus assembling that their immense numbers strike you with astonishment. Even those who have witnessed the vast flights of the Passenger Pigeon, so vividly described by Audubon, could hardly avoid expressing surprise at seeing the multitudes of these birds which at sunset move in one dense mass over and around the roosting-place, when the noise of the old birds, the quack and the piping whistle of the young ones, are almost deafening. Like its near ally, it commences the task of incubation in December, and lays but a single egg : while sitting on which, or tending its young, it is very easily caught, as it will suffer itself to be taken off the nest rather than quit it. It forms an excellent article of food, and several

hundreds were daily killed during our stay on the island. As this bird resorts to the upper branches alone, it is secure from the attacks of the lizard, so destructive to the Noddy, the animal not being able to climb the branches with sufficient facility to capture it; and this may doubtless be one of the causes why it is more numerous than any of the many other birds inhabiting the islands."

The egg is of a pale stone or cream colour, marked all over with large irregular-shaped blotches of dull chestnut-red and dark brown, the latter appearing as if beneath the surface of the shell; the blotches are thinly dispersed except at the larger end, where they are largest and most numerous; it is one inch and three-quarters long by one inch and five sixteenths broad.

There is no visible difference in the outward appearance of the sexes.

Crown of the head and back of the neck light ash-colour, passing into deep grey on the mantle and back; immediately before the eyes a large patch, and behind a smaller one, of jet-black; posterior half of the lower and a smaller space on the upper lash snow-white; throat, forepart of the neck, and all the under surface deep sooty black; wings and all the under surface of the same colour, but rather browner; bill black; tarsi and toes brownish black.

Total length 12 to 13 inches; tail $2\frac{1}{4}$; wing $8\frac{3}{4}$; tail 5; tarsi $\frac{7}{8}$; middle toe and nail $1\frac{1}{2}$.

Sp. 615. ANOUS LEUCOCAPILLUS, *Gould*.

WHITE-CAPPED NODDY.

Anous leucocapillus, Gould in Proc. of Zool. Soc., part xiii. p. 103.

Anous leucocapillus, Gould, *Birds of Australia*, fol., vol. vii. pl. 36.

Examples of this beautiful Tern were presented to me by the late Commander Ince, R.N., by whom they were procured on Raine's Islet, where it was very abundant. It is

nearly allied to the *Anoüs tenuirostris* of Western Africa, with which indeed Sir William Jardine considers it to be identical; but the late Prince Bonaparte treats it as distinct in his arrangement of the *Laridæ* in the 'Comptes Rendus de l'Académie des Sciences' for 1856, and I shall therefore retain it under the name I assigned to it. All that has been said respecting the *Anous stolidus* is equally applicable to the present species, their habits, manners, and mode of life being very similar.

Crown of the head and nape of the neck white; lores and space surrounding the eye deep black; near the posterior angle of the upper and lower eyelids a small patch of white; breast, all the under surface and the wings deep sooty black; back of the neck, back, and tail the same, slightly tinged with ash; bill black; feet brownish black.

Total length 14 inches; bill $2\frac{1}{4}$; wing 9; tail 5; tarsi $\frac{7}{8}$; middle toe and nail $1\frac{1}{2}$.

Genus PROCELSTERNA, *Lafresnaye*.

This genus was established for two little Terns, nearly allied to the members of the genus *Anous*, but from which they differ in some minor particulars. The specific term *cinereus* applied by me to the following species having been previously employed by Neboux, the late Prince Bonaparte sunk my name into a synonym, and replaced it with *albivitta*, which I accordingly adopt.

Sp. 616. PROCELSTERNA ALBIVITTA.

GREY NODDY.

Anous cinereus, Gould in Proc. of Zool. Soc., part xiii. p. 104.

Pelecanopus pelecانoides, G. R. Gray, List of Birds in Coll. Brit. Mus., part iii. p. 180.

Procelsterna albivitta, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Anous cinereus, Gould, Birds of Australia, fol., vol. vii. pl. 37.

This little species is a native of the seas bordering the

eastern and north-eastern coasts of Australia, and is said to breed on Norfolk Island. It is in every respect a true *Anous*, and, so far as is known, has many habits in common with those of the other members of the genus.

Mr. Macgillivray sent beautiful examples of the eggs of this species. They are cream-coloured, sparingly spotted, and dashed with reddish brown and grey markings, the latter appearing to be beneath the surface; they are one inch and five-eighths long by one inch and a quarter wide.

Head, neck, and all the under surface silvery greyish white; round the eye a narrow ring of feathers, the anterior half of which is deep black and the posterior half white; back, wings, and tail light grey; secondaries tipped with white; bill black; tarsi and toes brownish black; interdigital membrane yellowish.

Total length 11 inches; bill $1\frac{1}{2}$; wing 8; tail 5; tarsi $1\frac{1}{8}$; middle toe and nail $1\frac{3}{8}$.

Family PROCELLARIÆ.

There is perhaps no group of birds respecting which so much confusion exists, and the extent of whose range over the ocean is so little known, as that forming the present family.

Having paid much attention to these birds during my passages to and from Australia, my researches were rewarded by my obtaining a knowledge of nearly forty different species, most of which are peculiar to the southern hemisphere, and many of them frequenters of the Australian seas. The largest and most important of these truly oceanic birds are the Albatrosses, next to these the great Petrels, and then the Shearwaters, Prions, Diving and Storm-Petrels. All these frequenters of the great deep, from the huge *Diomedæ* to the little *Thalassidromæ*, principally live on the *Physaliæ*, gelatinous *Medusæ*, and other lowly organized creatures, the larger birds changing their diet occasionally by feeding upon

floating crustaceans, the oily blubber of dead cetaceans, and the fatty offal thrown overboard from passenger-ships during their long voyages. The powers of flight with which these birds are endowed are perfectly astonishing, and they appear to be constantly performing journeys round the globe from west to east; and Australia lying in their track, all the species may be found near its shores at one or another season of the year.

These Albatroses have been divided by Dr. Reichenbach into three genera—*Diomedea*, *Thalassarche*, and *Phæbetria*, the members of each of which certainly differ somewhat in structure, and, my own observation of them in a state of nature enables me to add, in their habits and economy also.

Respecting the flight of these birds, I take the liberty of making a lengthened extract from Capt. F. W. Hutton's valuable "Notes on some of the Birds inhabiting the Southern Ocean," read at the Natural History Society of Dublin, March 3, and published in the July number of the 'Ibis,' 1865, pp. 294–298:—

"The unrivalled flight of the Albatros has been the admiration of voyagers from the earliest time. Day after day, with unabated interest I have watched them, and I quite agree with Mr. Gould that the Sooty Albatros (*D. fuliginosa*) carries off the palm from all competitors. Never have I seen anything to equal the ease and grace of this bird as he sweeps past, often within a few yards, every part of his body perfectly motionless except the head and eye, which turn slowly, and seem to take notice of everything. I have sometimes watched narrowly one of these birds sailing and wheeling about in all directions for more than an hour, without seeing the slightest movement of the wings. This, however, is longer than usual. Wonderful as is this power of flight, it can all be explained by the simple mechanical laws which govern the direction and magnitude of pressures. Dr. Bennett states that he believes 'that the whole surface [of the body of the Albatros] is covered by numerous air-cells, capable of a voluntary inflation

or diminution by means of a beautiful muscular apparatus. By this power the birds can raise or depress themselves at will.' Now, I do not for a moment doubt the existence of this apparatus, for it is well known that all birds have it to a greater or less extent ; but I *do* doubt its capability of doing the duty assigned to it, viz. raising the bird in the air. The temperature of the Albatros, as taken by Sir G. Grey, by placing a thermometer under the tongue, is 98° F., and if we add 10° F. to this, in order to allow for the difference between the head and the body, we shall have the temperature of the air-cells at 108° F. The temperature of the surrounding air cannot be taken lower than 48° F., as the mean winter temperature of lat. 50° S. is about 50° F. The bird, therefore, could not raise the temperature of the air taken into these cells more than 60° F. This would increase its volume not quite one-eighth ; and taking 100 cubic inches of air to weigh 31 grains, and the average weight of an Albatros to be 17 lbs., as given by Gould, it would be necessary, in order that the specific gravity of the bird might be brought to that of the atmosphere, that these cells should contain 1820 cubic feet of air ; or, in other words, they must be more than 1200 times the size of the body itself of the bird, which, to say the least, would give it when flying an aldermanic appearance which I have never observed. In fact it would require a sphere of more than fifteen feet in diameter to contain the necessary quantity of air. Even if it could thus buoy itself up, it would entirely defeat its own object ; for it would at once destroy the whole of its momentum, and unless propelled forward by its wings, would drift helplessly to leeward. However, I do not wish it to be inferred that I consider the air-cells of no use. The greater portion of them are situated round the neck, wings, and fore-part of the body of the bird, and I believe that by their means he is enabled to shift slightly the position of his centre of gravity, and thus, with very slight muscular exertion, to vary the inclination of his

body to the horizon, according to the rate at which he is moving through the air.

“Dr. Bennett, in his ‘Gatherings of a Naturalist’ (p. 78), gives a diagram explanatory of the flight of the Albatros,” continues Capt. Hutton; and, if I understand him rightly, says that “it cannot sail directly against the wind, but only in the way which sailors call ‘close-hauled.’” This diagram represents a square-rigged ship sailing six points from the wind, a cutter sailing four and a half points, and an Albatros flying two points from the wind; from which I infer, although he does not expressly say so, that he considers that the wind helps forward the Albatros in the same way that it does the ships. But that this is erroneous is apparent at a glance. A ship can sail at an acute angle with the wind, because the pressure of the wind against its sails being met by the resistance of the water is resolved into pressures having other directions. Advantage of this being taken by trimming the sails, it ultimately results that the ship is moved in the direction of least resistance, viz. forwards. If, however, the pressure of the wind had not been met by the resistance of the water, no resolution of it into other directions could have taken place. For this reason a balloon can only drift with the wind, and the same would be the case with the Albatros. Moreover, the statement that he cannot sail against the wind is incorrect, as Dr. Bennett himself said in his first book, ‘Wanderings in New South Wales;’ the truth being that he is more often seen sailing in this direction than in any other, for the simple reason that as he moves slower against the wind than with it, he is obliged to keep going for a longer time in the former direction than in the latter, in order to retain his position near the stern of the ship. However, when sailing against the wind the position of his wings, body, and tail, slanting a little downwards, is somewhat analogous to the sails of a ship close-hauled, or, still better, to the position of a kite in the air; the momentum of the bird taking the place of the

resistance of the water, or the string of the kite. This momentum is entirely owing to impulses previously given to the air by means of his wings, and when, owing to the resistance of the air, it has decreased so much that he is no longer able to move with sufficient rapidity to prevent his falling, fresh impulses have to be given. For this reason, Albatroses sail much longer in fine than in stormy weather, rain especially soon destroying their momentum, and frequently obliging them to use their wings for propulsion.

“It is by combining, according to the laws of mechanics, this pressure of the air against his wings with the force of gravity, and by using his head and tail as bow and stern rudders, that the Albatros is enabled to sail in any direction he pleases, so long as his momentum lasts. If, when sailing against the wind, the inclination of his body is such that the upward pressure of the wind against his wings and body just balances the force of gravity, his momentum alone acts, and he sails straight in the ‘wind’s eye.’ If he wishes to ascend, he inclines his body more to the horizon by means of his head and tail. If he wishes to turn to the right, he bends his head and tail slightly upwards, at the same time raising his left side and wing, and lowering the right in proportion to the sharpness of the curve he wishes to make, the wings being kept quite rigid the whole time. To such an extent does he do this that, in sweeping round, his wings are often pointed in a direction nearly perpendicular to the sea; and this position of the wings, more or less inclined to the horizon, is seen always, and only when the bird is turning. It will be observed that, on this principle, an Albatros sailing down wind must necessarily be descending, unless his pace is much greater than that of the air, and such I have found to be invariably the case.

“It may be objected that the resistance of the air must soon destroy his momentum; but the fact is that it does not do so. A good illustration of this is seen in an experiment,

common in lecture-rooms a few years ago, by which the rotation of the earth was demonstrated by means of a pendulum, composed of a metal ball suspended by a long string from the ceiling of the lecture-hall. 'The impetus obtained by causing the metal ball to fall through the space of a few feet only was sufficient to keep the pendulum swinging, with a velocity but little diminished, for the greater part of an hour, notwithstanding the resistance of the sand, which the point of the pendulum had to cut through twice during each vibration. The resistance of the air is well known to depend on the shape and velocity of the moving body, and to increase in proportion much more rapidly than the velocity increases. For this reason a properly-shaped body and a low velocity are required to reduce it to a minimum. A certain amount of weight is also necessary to give a bird momentum sufficient to overcome the resistance for a certain time, and wings are required of sufficient expanse to support it as it sails slowly through the air. These conditions are admirably carried out in the Albatros; its expanse of wing is perhaps greater than that of any other bird, and its weight, 15 lbs. and upwards, is very large. Its shape, also, when the neck is stretched out, as in flying, approaches very nearly to that of Newton's solid of least resistance, while more than one voyager has remarked the slowness with which it sails past. The Petrels I have mentioned sail very nearly in proportion to their size and weight. The Stormy Petrel never sails; the Cape Pigeon only for a very short time, perhaps a minute; the 'Night-Hawk' much longer, often between five and ten minutes; while the Albatros, as I have before mentioned, sails sometimes for an hour, 'rising and falling,' says Dr. Bennett, 'as if some concealed power guided its various motions, without any muscular exertion of its own,' but which we must only look upon as another illustration of the small resistance offered by the air to the passage of a properly-shaped heavy body moving through it with a low velocity."

Genus **DIOMEDEA**, *Linnæus*.

This genus, as restricted, comprises the largest of the oceanic birds. The two or three species known of this form frequent the seas on both sides of the equator.

Sp. 617. **DIOMEDEA EXULANS**, *Linn*.

WANDERING ALBATROS.

Diomedea exulans, Linn. Syst. Nat., vol. i. p. 214.

Plautus albatrus, Klein, Aves, p. 148, no. 13.

Albatrus, Briss. Orn., tom. vi. p. 126.

Man-of-War Bird, Albin, vol. iii. p. 34, pl. 81, head.

Wandering Albatros, Edw. Glean., pl. 88.

Diomedea exulans, Gould, *Birds of Australia*, fol., vol. vii. pl. 38.

It is a very prevalent idea that a lengthened voyage at sea must be attended with much monotony and *ennui*; such however is not the case, as from experience I can testify that the mind may be so far occupied in observing the hundreds of novelties which are constantly presenting themselves to its notice, that a voyage, however extensive, is neither tedious nor uninteresting, and I shall always look back with feelings of pleasure to that in the course of which I made the circuit of the globe. It was then that I first had an opportunity of observing in a state of nature the noble bird known as *Diomedea exulans*, by far the largest and most powerful species of its tribe, and which, from its great strength and ferocious disposition, is held in terror by every other bird with which it is surrounded. So sanguinary in fact is it, that it is even said it will attack and tear out the eyes of a drowning man, a feat, from what I have observed of it, I can readily imagine it would attempt, if a human being should unhappily be placed in such a position, and be unable to defend himself. The Wandering Albatros is most abundant between the 30th and 60th degrees of south latitude, and

appears to be equally numerous in all parts of the ocean bounded by those degrees, and I feel assured that it is confined to no one part. The open sea is, in fact, its natural home, and this it never leaves except for the purpose of breeding, when it usually resorts to rocky islands the most difficult of access. To mention particular times and places where I observed this bird would be superfluous, as it was almost daily seen while sailing within the prescribed latitudes; it will not, however, be out of place to mention that I first hailed its presence on the 24th of July 1838, in lat. $30^{\circ} 38'$ south, long. $20^{\circ} 43'$ west, and from that day until my arrival at Storm Bay, Tasmania, it was constantly around the ship, but was more abundant off the Cape of Good Hope and the island of St. Paul's than elsewhere.

The powers of flight of the Wandering Albatros are much greater than those of any other bird that has come under my observation. Although during calm or moderate weather it sometimes rests on the surface of the water, it is almost constantly on the wing, and is equally at ease while passing over the glassy surface during the stillest calm, or flying with meteor-like swiftness before the most furious gale; and the manner in which it just tops the raging billows and sweeps between the gulfy waves has a hundred times called forth my wonder and admiration. Although a vessel running before the wind frequently sails more than 200 miles in the twenty-four hours, and that for days together, still the Albatros has not the slightest difficulty in keeping up with the ship, but also performs circles of many miles in extent, returning again to hunt up the wake of the vessel for any substances thrown overboard.

"It is pleasing," says Mr. Bennett, in his 'Wanderings,' "to observe this superb bird sailing in the air in graceful and elegant movements, seemingly excited by some invisible power, for there is scarcely any movement of the wings seen after the first and frequent impulses are given, when the creature

elevates itself in the air, rising and falling as if some concealed power guided its various motions, without any muscular exertion of its own, and then descending sweeps the air close to the stern of the ship with an independence of manner as if it were 'monarch of all it survey'd.' It is from the very little muscular exertion used by these birds that they are capable of sustaining such long flights without repose. When seizing an object floating on the water they gradually descend with expanded or upraised wings, or sometimes alight and float like a Duck on the water, while devouring their food; then, elevating themselves, they skim the surface with expanded wings, giving frequent impulses as they run along for some distance, until they again soar in mid-air and recommence their erratic flights."

Like the other species of the genus, it is nocturnal as well as diurnal, and no bird with which I am acquainted takes so little repose; it appears to be perpetually on the wing, scanning the surface of the ocean for mollusks and medusæ, and the other marine animals that constitute its food. So frequently does the boldness of this species cost it its life, that hundreds are annually killed without, however, its numbers being apparently in any degree lessened; it readily seizes a hook baited with fat of any kind, and if a boat be lowered its attention is immediately attracted, and while flying round it is easily shot. Many exaggerated and marvellous accounts having been published respecting the weight and the dimensions of this bird, particularly of the extent from tip to tip of the wings, I paid much attention to the subject, and, after killing numerous examples of both sexes and of all ages, I found the average weight of the *Diomedea exulans* to be seventeen pounds, and the extent from tip to tip of the wing ten feet one inch. Dr. McCormick, R.N., however, informs me that he has met with examples weighing as much as twenty pounds, the extent of whose outstretched wings measured twelve feet. The known breeding-places of

the *Diomedea exulans* are the islands of Tristan d'Acunha, Auckland, and Campbell; that it also breeds on the Mewstone, Eddystone, and the adjacent rocks to the southward of Tasmania, I have but little doubt, as some of the finest adult specimens I procured were shot within a few miles of those barren and inaccessible rocks; but as I have not had an opportunity of observing the nidification of this bird, I avail myself of Mr. Augustus Earle's 'Narrative of a nine Months' Residence on the Island of Tristan d'Acunha,' wherein he says—

“Yesterday, May the 28th, being a fine morning, accompanied by two of the men, I determined to ascend the mountain. As several parties had before gone up, they had formed a kind of path; at least we endeavoured to trace the same way, but it required a great deal of nerve to attempt it. The sides of the mountain are nearly perpendicular; but after ascending about 200 feet, it is there entirely covered with wood, which renders the footing much more safe; but in order to get to the wood, the road is so dangerous that it made me almost tremble to think of it; slippery grey rocks, and many of them unfortunately loose, so that when we took hold they separated from the mass, and fell with a horrid rumbling noise; here and there were a few patches of grass, the only thing we could depend upon to assist us in climbing, which must be done with extreme caution, for the least slip or false step would dash one to atoms on the rocks below. By constantly looking upwards and continuing to haul ourselves up, by catching firm hold of the grass, after an hour's painful toil we gained the summit, where we found ourselves on an extended plain of several miles' expanse, which terminates in the peak, composed of dark grey lava, bare and frightful to behold. We proceeded towards it, the plain gradually rising, but the walk was most fatiguing over strong rank grass and fern several feet high. A deathlike stillness prevailed in these high regions, and, to my ear, our voices

had a strange unnatural echo, and I fancied our forms appeared gigantic, whilst the air was piercing cold. The prospect was altogether sublime and filled the mind with awe: the huge Albatros here appeared to dread no interloper or enemy, for their young were on the ground completely uncovered, and the old ones were stalking around them. They lay but one egg, on the ground, where they make a kind of nest by scraping the earth around it; the young is entirely white and covered with a woolly down, which is very beautiful. As we approached they snapped their beaks with a very quick motion, making a great noise; this and the throwing up of the contents of the stomach are the only means of offence and defence they seem to possess. I again visited the mountain about five months afterwards, when I found the young Albatroses still sitting on their nests, and they had never moved away from them."

To this interesting account I beg to append the following notes, kindly furnished me by Dr. McCormick, Surgeon of H.M.S. 'Erebus' during the late expedition to the south pole:—

"The *Diomedea exulans* breeds in Auckland and Campbell Islands, in the months of November and December. The grass-covered declivities of the hills, above the thickets of wood, are the spots selected by the Albatros for constructing its nest; which consists of a mound of earth, intermingled with withered grass and leaves matted together, 18 inches in height, 6 feet in circumference at the base, and 27 inches in diameter at the top, in which only *one* egg is usually deposited; for after an examination of more than a hundred nests, I met with *two* eggs in the *same* nest in one solitary instance only. The eggs I had an opportunity of weighing varied in weight from $14\frac{1}{2}$ to 19 oz., thirty specimens giving an average weight of 17 oz.; colour white. The Albatros during the period of incubation is frequently found asleep, with its head under its wing: its beautiful white head and neck, ap-

pearing above the grass, betray its situation at a considerable distance off. On the approach of an intruder it resolutely defends its egg, refusing to quit the nest until forced off, when it slowly waddles away in an awkward manner to a short distance, without attempting to take wing. Its greatest enemy is a fierce species of *Lestris*, always on the watch for the Albatros quitting its nest, when this rapacious pirate instantly pounces down and devours the egg. So well is the poor bird aware of the propensity of its foe, that it snaps the mandibles of its beak violently together whenever it observes the *Lestris* flying overhead."

Captain F. W. Hutton states that Wandering Albatroses "are very common south of latitude 40° S., and monopolize nearly the whole of the Prince Edward Islands, and the south-east portion, or lee side, as the sailors call it, of Kerguelen's Land, to which places they retire to breed in October. The nest, which is always placed on high table-lands, is in the shape of a frustrum of a cone, with a slightly hollowed top, and is made of grass and mud, which the birds obtain by digging a circular ditch, about two yards in diameter, and pushing the earth towards the centre until it is about eighteen inches high. In this nest the female lays one white egg, which is not hatched till January."—*Ibis*, 1865, p. 279.

I am indebted to Dr. McCormick for a fine egg of this species, which is four inches and three-quarters long by three and a quarter broad, of a pure white and of the ordinary shape; another, presented by this gentleman to the Royal College of Surgeons, is much longer and nearly equal in size at both ends.

Mr. Earle states that the young are a year old before they can fly, but on this point I fear he must be mistaken; for although a long period must elapse before their lengthened wings are sufficiently developed to sustain their heavy bodies during their lengthened flights, still it is natural to suppose that the young would leave the nest before the recurrence of

the breeding-season ; and we know that such is the case, from the circumstance of young birds and newly laid eggs not having been found at the same time on the islands visited by the officers of the expedition under Captain Ross.

The Wandering Albatros varies much in colour at different ages : very old birds are entirely white, with the exception of the pinions, which are black ; and they are to be met with in every stage, from pure white, white freckled, and barred with dark brown, to dark chocolate-brown approaching to black, the latter colouring being always accompanied by a white face, which in some specimens is washed with buff ; beneath the true feathers they are abundantly supplied with a fine white down ; the bill is delicate pinky white inclining to yellow at the tip ; irides very dark brown ; eyelash bare, fleshy and of a pale green ; legs, feet, and webs pinky white.

The young are at first clothed in a pure white down, which gives place to the dark brown colouring mentioned above.

Sp. 618. DIOMEDEA BRACHYURA, *Temm.*

SHORT-TAILED ALBATROS.

Diomedea brachyura, Temm. Pl. Col. 554.

—— *chinensis*, Temm. (G. R. Gray).

Diomedea brachyura, Gould, *Birds of Australia*, fol., vol. vii. pl. 39.

This is the only bird of this form, with which I am acquainted, that flies to the northward of the equator, and it is described in the present work more for the purpose of including a second species of the restricted genus *Diomedea* than for its being strictly speaking an Australian bird ; still the chances are that it does frequently visit the northern coasts of that country, since it is abundantly dispersed over the North Pacific and Indian Oceans ; it is, however, most numerous in the China Seas. It is a very fine species, and only exceeded in size by the *Diomedea exulans*, to which it bears a considerable resemblance, but from which it may be distinguished by

the shortness of its tail and by the truncated form of the base of the bill.

Its habits, manners and food doubtless resemble those of *Diomedea exulans*.

The adults of both sexes have the general plumage white, washed with buff on the head and neck ; the edge and centre of the wing white, the remainder and the tips of the tail dark brown ; bill pinky flesh-colour ; irides brown ; legs and feet bluish white ; eyelash greenish white.

The young differ in being of a uniform chocolate-brown.

Sp. 619. DIOMEDEA CAUTA, *Gould*.

SHY ALBATROS.

Diomedea cauta, Gould in Proc. of Zool. Soc., part viii. p. 177.

— (*Thalassarche*) *cauta*, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Diomedea cauta, Gould, *Birds of Australia*, fol., vol. vii. pl. 40.

I first saw this species of Albatros off the south coast of Tasmania, and had frequent opportunities of observing it during my stay in Recherche Bay, at the southern entrance of D'Entrecasteaux's Channel, where I was wind-bound for nearly a fortnight. Unlike other Albatroses, it was most difficult to procure, for it seldom approached our ship sufficiently near for a successful shot: I succeeded, however, in shooting several examples while they were flying round the Bay in which we had taken shelter. It is not usual for Albatroses to approach the land or enter a secluded bay like that of Recherche, and I attribute this deviation from the ordinary habits to the temptation presented by the vast quantities of fat and other remains of Whales floating about, the locality being one of the principal whaling stations on the coast of Tasmania ; I have no doubt likewise that it was breeding on the Mewstone and other isolated rocks in the neighbourhood, as the plumage of some of the specimens I

procured indicated that they had lately been engaged in the task of incubation.

It is a large and powerful bird, the male being scarcely a third less in size than the *D. exulans*; is rapid and vigorous on the wing, and takes immense sweeps over the surface of the ocean. It will be interesting to learn the extent of the range of this species. A head in the possession of Sir William Jardine was said to have been procured at the Cape of Good Hope, but I believe this was by no means certain.

When fully adult the sexes differ but little in colour; the female may, however, at all times be distinguished by her diminutive size, and the young by the bill being clouded with dark grey.

Besides being larger than the three succeeding species (to which and the present the generic appellation of *Thalassarche* has been given), the beautiful grey on the sides of the mandibles, and the yellow mark at the base of the lower mandible will at all times distinguish this bird from the other members of the genus.

The stomachs of those I obtained in Recherche Bay contained blubber, the remains of large fish, barnacles, and other crustaceans.

Crown of the head, back of the neck, throat, all the under surface, rump, and upper tail-coverts pure white; lores and line over the eye greyish black, gradually passing into the delicate pearl-grey which extends over the face; back, wings, and tail greyish brown; irides dark vinous orange; bill light vinous grey or bluish horn-colour, except on the culmen, where it is more yellow, particularly at the base; the upper mandible surrounded at the base by a narrow belt of black, which also extends on each side the culmen to the nostrils; base of the lower mandible surrounded by a belt of rich orange, which extends to the corners of the mouth; feet bluish white; irides brown.

Total length 31 inches; bill $4\frac{1}{2}$; wing $21\frac{1}{2}$; tail 9; tarsi 3.

Sp. 620. DIOMEDEA CULMINATA, *Gould*.

CULMINATED ALBATROS.

Diomedea culminata, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 361.

—— (*Thalassarche*) *culminata*, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Diomedea culminata, Gould, Birds of Australia, fol., vol. vii. pl. 41.

This species appears to be more plentiful in the Australian seas than elsewhere; numbers came under my notice during a voyage from Launceston to Adelaide, particularly off Capes Jervis and Northumberland; I frequently observed it between Sydney and the northern extremity of New Zealand, and it also occurred in the same latitude of the Indian Ocean as abundantly as any of its congeners. It is a powerful bird, and directly intermediate in size between *Diomedea cauta* and *D. chlororhynchos*. The specific differences of the three species are so apparent, that I had no difficulty whatever in distinguishing them while on the wing. In *D. chlororhynchos* the bill is more compressed laterally, the culmen is round, and the yellow colouring terminates in an obtuse point midway between the nostrils and the base; while in *D. culminata* the culmen is broad and flat, and has its greyish-yellow colouring continued of the same breadth to the base; the feet of the latter are also fully a third larger than those of the former.

The habits, mode of life, and the kind of food partaken of by the *D. culminata* are so precisely similar to those of its congeners, that a separate description would be a mere repetition of what has already been said respecting the preceding species.

Back, wings, and tail dark greyish black, the latter with white shafts; head and neck white, washed with greyish black; round the eye a mark of greyish black, interrupted by a streak of white immediately below the lower part of the

lid ; rump, upper tail-coverts, and all the under surface pure white ; bill black, with the exception of the culmen and tip and the lower edge of the basal three-fourths of the under mandible, which are horn-colour.

In the youthful state the head and neck are dark grey, and the bill is of an almost uniform brownish black, with only an indication of the lighter colour of the culmen.

Sp. 621. **DIOMEDEA CHLORORHYNCHOS,**

Latham.

YELLOW-NOSED ALBATROS.

Diomedea chlororhynchos, Lath. Ind. Orn., vol. ii. p. 790.

Yellow-nosed Albatros, Lath. Gen. Syn., vol. v. p. 309, pl. 99.

Diomedea chrysostoma, Forst. Drawings, and Lichtenstein's Edit. of Forster's MSS., p. 24.

—— (*Thalassarche*) *chlororhynchos*, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Wool-wool, Aborigines of the lowland districts of Western Australia.

Diomedea chlororhynchos, Gould, *Birds of Australia*, fol., vol. vii. pl. 42.

This species came under my observation for the first time on the 24th of July, 1838, in Lat. 30° 38' S. and Long. 20° 43' W. ; from which period until we reached New South Wales scarcely a day passed without the ship being visited by it ; upon some occasions it appeared in considerable numbers, of which many were apparently birds of one year old, or at most two years of age ; these may be easily distinguished from the adults, especially while flying, by the darker colouring of their wings, back, and tail, and by the culmen of the bill being less distinctly marked with yellow.

The Yellow-nosed Albatros is plentiful off the Cape of Good Hope, and in all the intermediate seas between that point and Tasmania ; I also observed it off Capes Howe and Northumberland on the southern coast of Australia, and Gilbert states

that he saw it flying about Rottnest Island on the western coast.

In its flight and general economy it greatly resembles the next species, with which it is often in company.

Spot before and line above the eye washed with grey ; head, neck, all the under surface, rump, upper tail-coverts and under surface of the wing snow-white ; back and wings brownish black ; tail brownish slate-colour, with white shafts ; culmen from near the base to the point bright orange-yellow ; remainder of the bill black ; irides greyish brown ; feet bluish white.

Sp. 622. DIOMEDEA MELANOPHRYS, *Temm.*

BLACK-EYEBROWED ALBATROS.

Diomedea melanophrys, Temm. Pl. Col. 456.

—— (*Thalassarche*) *melanophrys*, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Diomedea melanophrys, Gould, *Birds of Australia*, fol., vol. vii. pl. 43.

The *Diomedea melanophrys* may be regarded as the most common species of Albatros inhabiting the southern ocean, and, from its gregarious habits and very familiar disposition, it is known to every voyager who has rounded either of the Capes. I have never myself been at sea many days between the 35th and 55th degrees of south latitude without recognizing it, and it appeared to me to be equally numerous in the Atlantic as in the Pacific. On my passage to Australia, numerous individuals followed our vessel for hundreds of miles as we proceeded eastward, and I have no doubt that in the course of their peregrination they frequently make the circuit of the globe ; a not unnatural conclusion, when we reflect upon the great powers of flight given to all the members of the present genus, and that their natural food is as abundant at one part as at another. It was nowhere more numerous than off the

southern coast of Tasmania, where a large company followed our vessel for many days and continued to hover around us until we entered Storm Bay, but on our approaching the land, they suddenly disappeared, betaking themselves again to the open ocean. Of all the species with which I am acquainted, this is the most fearless of man, for it often approaches many yards nearer the vessel than any other ; I have even observed it so near that the tips of its pinions were not more than two arms' length from the taffrail. It is very easily captured with a hook and line, and as this operation gives not the least pain to the bird, the point of the hook merely taking hold in the horny and insensible tip of the bill, I frequently amused myself by capturing specimens in this way, and after detaining them sufficiently long to afford me an opportunity for investigating any particular point respecting which I wished to satisfy myself, setting them at liberty again, after having marked many, in order to ascertain whether the individuals which were flying round the ship at nightfall were the same that were similarly engaged at daylight in the morning after a night's run of 120 miles, and this in many instances proved to be the case. When brought upon deck, from which it cannot take wing, it readily becomes tame, and allows itself to be handled almost immediately ; still, I believe that no member of this group can be domesticated in consequence of the difficulty of procuring a supply of its natural food.

In heavy, black, and lowering weather the snowy white plumage of this bird offers a striking contrast to the murky clouds above and behind it.

Captain Hutton, in his 'Notes on some of the birds frequenting the Southern Ocean,' says this species "dives sometimes, but does not appear to like doing so, generally preferring, when anything good to eat is under water, to let a 'Night Hawk' fish it up ; then giving chase and running along the top of the water, croaking and with outstretched

wings, it compels him to drop it, and then seizes it before it sinks again. This bird, which is called 'Molly Hawk' by the sailors, is common round Cape Agulhas; and, in August 1857, I saw a large number in False Bay and round Cape Hanglip. It is apparently quite diurnal in its habits, both at sea and near land."—*Ibis*, 1865, p. 283.

But little difference is observable in the plumage of the sexes, neither is there any visible variation in this respect between youth and maturity; a never-failing mark, however, exists by which the latter state may be distinguished: the young bird has the bill dark brown, while in the adult that organ is of a bright buffy yellow; and individuals in the same flight may frequently be seen in which the bill varies from dark horn-brown to the most delicate yellow.

I did not discover the breeding-place of this species. "Commander Snow, in his 'Two Years' Cruise off Terra del Fuego,' says it breeds on the Falkland Islands, and describes its nest as similar to that of *Diomedea exulans*, but not more than twelve inches high; and Captain Carmichael states that it breeds on Tristan d'Acunha."—*Ibis*, 1865, p. 283.

Head, back of the neck, all the under surface, and the upper tail-coverts pure white; before, above, and behind the eye a streak of blackish grey; wings dark brown; centre of the back slaty black, into which the white of the back of the neck gradually passes; tail dark grey, with white shafts; bill buffy yellow, with a narrow line of black round the base; legs and toes yellowish white, the interdigital membrane and the joints washed with pale blue; irides very light brown, freckled with a darker tint.

Genus PHŒBETRIA, *Reichenbach*.

Only one species of this form has yet been discovered. It exhibits some peculiarities in the structure of its bill, in the lengthened or acuminate shape of its tail, and in the large size of its wings. These departures from the structure of the other Albatroses have an influence on its actions and economy, as will be perceived on perusal of the following description.

Sp. 623. PHŒBETRIA FULIGINOSA, *Gmel*.

SOOTY ALBATROS.

Diomedea fuliginosa, Gmel. Edit. of Linn. Syst. Nat., vol. i. p. 568.

—— *palpebrata*, Forst. Drawings, No. 102.

—— *antarctica*, Banks's Drawings, No. 26.

—— *fusca*, Aud. Birds of Amer., vol. iv. pl. 407.—Ib. Orn. Bio., vol. v. p. 116.

—— (*Phæbetria*) *fuliginosa*, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Black Albatros, Linn. Trans., vol. xii. p. 489.

Sooty Albatros, Lath. Gen. Syn., vol. v. p. 309.

Diomedea fuliginosa, Gould, Birds of Australia, fol., vol. vii. pl. 44.

The *Phæbetria fuliginosa* is one of the commonest species of the genus, and is universally distributed over all the temperate latitudes to the southward of the equator. On referring to my notes I find that it first came under my notice on the 23rd of July 1838, in lat. 31° 10' S., long. 34° W., when three examples were seen flying round the ship, which they continued to do until we doubled the Cape and entered the South Indian Ocean, on the 14th of August. It was constantly seen between the island of St. Paul and Tasmania, but was never very numerous, six or eight being the greatest number that I saw at any one time; and days sometimes passed away without more than a single individual having made its appearance. On my voyage homeward it was noticed on the

6th of May in lat. 40° S., long. 154° W.; in the Pacific near Cape Horn on the 20th of May in lat. 50° S., long. 90° W., and still more abundantly in the Atlantic on the 12th of June in lat. 41° S., long. $34\frac{1}{2}^{\circ}$ W.

The cuneated form of the tail, which is peculiar to this species, together with its slight and small legs and more delicate structure, clearly indicate that it is the most aërial species of the genus; and accordingly we find that in its actions and mode of flight it differs very considerably from all the other species of Albatros, its aërial evolutions being far more easy, its flight much higher, and its stoops more rapid; it is moreover the only species that passes directly over the ship, which it frequently does in blowing weather, often poising itself over the masthead, as if inquisitively viewing the scene below; at this moment it offers so inviting a mark for the gunner, that it often forfeits its life.

Latham states that it breeds on "the island of Tristan d'Acunha, is gregarious, many of them building their nests close to each other; in the area of half an acre were reckoned upwards of a hundred. The nest is of mud, raised five or six inches, and slightly depressed at the top; when the young birds are more than half-grown they are covered with a whitish down; they stand on their respective hillocks like statues, till approached close, when they make a strange clattering with their beaks, and if touched, squirt a deluge of foetid oily fluid from the nostrils."

The whole of the plumage deep sooty grey, darkest on the face, wings, and tail; shafts of the primaries and tail-feathers white; eyes very dark greyish brown, surrounded, except anteriorly, by a beautiful mark of white; bill jet-black, with a longitudinal line of white along the under mandible, this white portion not being horny like the rest of the bill, but composed of fleshy cartilage, which becomes nearly black soon after death; feet white, tinged with fleshy purple.

As will be seen, the ten following species of Petrels have been divided into several genera, the majority of which have been adopted by Dr. Elliott Coues in his valuable memoirs on this family of birds in the 'Proceedings of the Academy of Sciences' of Philadelphia' for 1864. Generally speaking, all of them are of medium size, the exception being the *Ossifraga gigantea*, *Æstrelata leucoptera*, and *Æ. cooki*, which, on the one hand, leads to the Albatroses, and on the other, through *Halobæna*, to the more diminutive Prions.

Genus OSSIFRAGA, *Homb. et Jacq.*

Of this genus but one species is known. It is a most powerful bird, equalling in size and strength the smaller Albatroses. The sexes are alike in plumage.

Sp. 624. OSSIFRAGA GIGANTEA.

GIANT PETREL.

Procellaria gigantea, Gmel. Edit. of Linn. Syst. Nat., vol. i. p. 563.

— *ossifraga*, Forst.

Mother Cary's Goose, Cook's Voy., vol. ii. p. 205.

Giant Petrel, Lath. Gen. Syn., vol. vi. p. 396, pl. 100.

Ossifraga gigantea, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Procellaria gigantea, Gould, Birds of Australia, fol., vol. vii. pl. 45.

This, the largest of the Petrels, is universally distributed over all the temperate and high southern latitudes: and that it frequently performs the circuit of the globe may, I think, be fairly inferred from the circumstance of an albino variety having followed the vessel in which I made my passage to Australia for three weeks while we were running down our longitude between the Cape of Good Hope and Tasmania, the ship often making nearly two hundred miles during the twenty-four hours; it must not, however, be understood that the bird was merely following the vessel's speed, nor deemed

incredible when I state that during the twenty-four hours it must have performed a much greater distance, since it was only at intervals of perhaps half an hour that it was seen, hunting up the wake of the vessel to secure any offal, &c. that had been thrown overboard, the interim being employed in scanning the ocean in immense circles.

Its flight is not so easy, graceful and buoyant as that of the Albatros, but is of a more laboured and flapping character; the bird is also of a more shy disposition, and never approaches so near the vessel as the other members of the family; while flying, its white bill shows very conspicuously.

On visiting Recherche Bay in D'Entrecasteaux's Channel, Tasmania, I found thousands of this species sitting together on the water and feeding on the blubber and other refuse of the whaling-station. I did not observe the bird between Sydney and New Zealand, but on arriving in lat. 50° S., long. 90° W., nearly off Cape Horn, a solitary wanderer flew about the ship; and in lat. 41° S., long. 34° W., a few were still seen in pairs. Captain Cook found it very abundant on Christmas Island, Kerguelen's Land, in December, when it was so tame that his sailors knocked it down with sticks.

Captain F. W. Hutton states that "this bird breeds in the cliffs of the Prince Edward Islands and Kerguelen's Land, but the nests can be got at occasionally. The young are at first covered with a beautiful long light grey down; when fledged they are dark brown mottled with white. When a person approaches the nest the old birds keep a short distance away while the young ones squirt a horridly smelling oil out of their mouths to the distance of six or eight feet. It is very voracious, hovering over the sealers when engaged cutting up a seal, and devouring the carcase the moment it is left, which the Albatros never does. It sometimes chases the smaller species, but whether or not it can catch birds possessed apparently of powers of flight superior to its own is doubtful; but, supposing one killed, that it feeds only on its

heart and liver I cannot believe ; yet it is said to do so in the works of many ornithologists."—*Ibis*, 1865, p. 284.

The adults have the entire plumage of a dark chocolate-brown ; bill light horn-colour, the tip tinged with vinous ; irides dark blackish brown ; legs blackish brown.

Genus MAJAQUEUS, *Reichenbach*.

Bonaparte adopted this name for the *Procellaria æquinoctialis* and *P. conspicillata*—two robust birds differing considerably from the species of the succeeding forms. The South Atlantic, South Indian, and South Pacific Oceans are their native haunts.

Sp. 625. MAJAQUEUS CONSPICILLATUS, *Gould*.

SPECTACLED PETREL.

Procellaria conspicillata, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 362.

—— *larvata*, Less. (Bonap.).

Majaqueus conspicillatus, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Procellaria conspicillata, Gould, Birds of Australia, fol., vol. vii. pl. 46.

Although some ornithologists consider that I have committed an error in characterizing this bird as distinct from the *Procellaria æquinoctialis* of Linnæus, I am still of opinion that it is not referable to that species ; at the same time it must be admitted that it is most nearly allied to it ; the subject is fraught with the more difficulty from the circumstance of the white markings on the face not being always of the same form in different individuals ; and from the gular region being white in some instances, while in others it is black. In size the two species are very similar, but all the specimens of the present bird that I have seen have a much shorter and more robust bill than the true *M. æquinoctialis*, which moreover never has the white mark around the eye, the throat only being white.

The *Majaqueus conspicillatus* flies both in the Atlantic and Pacific, but is most plentiful between the twenty-fifth and fiftieth degrees of south latitude. I observed it to be very abundant about the islands of St. Paul and Amsterdam, and thence to Tasmania; I also noticed it in considerable numbers off the Falkland Islands in the Atlantic, and in the neighbourhood of Tristan d'Acunha.

Like the other members of the genus, it feeds upon mollusca, the remains of dead cetacea, &c.

The entire plumage sooty black, with the exception of the chin, sides of the face, and a broad band which crosses the forepart of the crown, passes down before and beneath, and curves upward behind the eye, which is white; nostrils and sides of the mandibles yellowish horn-colour; culmen, tips of both mandibles, and a groove running along the lower mandible black; feet black; irides dark brown.

Genus ADAMASTOR, *Bonaparte*.

Bonaparte has classed several Petrels under the above generic appellation, one of which has a claim to be considered as pertaining to the avifauna of Australia, since I obtained specimens during my passage from Hobart Town to Sydney.

Sp. 626. ADAMASTOR CINEREA.

GREAT GREY PETREL.

Procellaria cinerea, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 563.

Puffinus cinereus, Lawr. Birds of N. America, p. 835.

Procellaria hasitata, Forst. Desc. Anim. Ed. Licht., p. 208.

—— *adamastor*, Schleg. Mon. Proc. Mus. Pay. Bas, p. 25.

Adamastor typus, Bonap. Consp. Gen. Av., tom. ii. p. 187, *Adamastor*, sp. 1.

—— *cinerea*, Coues, Proc. Acad. Sci. Philad., 1864, p. 119.

Procellaria hasitata, Gould, Birds of Australia, fol., vol. vii. pl. 47.

This species enjoys so wide a range of habitat that it may

be said to be universally diffused between the 30th and 55th degrees of south latitude. I first observed it in lat. $38^{\circ} 41'$ S., long. $36^{\circ} 30'$ W., on the 16th of August 1838; during the next five days not more than a single specimen was seen at one time; on the 21st it was very numerous, and the day being nearly calm, I had a boat lowered, and succeeded in killing several in lat. $39^{\circ} 23'$ S., long. 54° W. Its powers of flight are very great, and in its passage over the ocean it often mounts higher in the air than most other members of the group, and descends again with the utmost eagerness to seize any fat substance thrown overboard. Its actions and flight differ slightly from those of the other Petrels, and more closely resemble those of the Albatroses.

I subsequently observed this bird in lat. $41^{\circ} 12'$ S., long. 115° W., and obtained specimens on my passage from Hobart Town to Sydney.

On my voyage homeward it appeared in considerable numbers during some strong heavy gales which occurred on the 6th of May 1840 in lat. 40° S., long. 154° W., and it was very abundant in the South Atlantic on the 12th of June in lat. 41° S., long. $34\frac{1}{2}^{\circ}$ W.

“This bird,” says Capt. Hutton, “combines the appearance of a *Procellaria* with some of the habits of a *Puffinus*. Its feathers fit very close, and have a glossy look. Like all other Petrels, it flies with its legs stretched out straight behind, and as they are rather long, they make the tail appear forked. Its cry is something like the bleating of a lamb. It is very common at sea from May to August, but retires to Kerguelen’s Land and other places in September or October to breed. Each pair burrows horizontally into wet peaty earth from two to eighteen feet. At the end of the hole they form a large chamber, and construct in the centre of it a nest similar, except in size, to that of the Albatros (*D. exulans*), in the hollowed top of which the female lays one white egg. They seldom leave their burrows in the daytime, and when one

happens to do so it is at once hunted by a 'Nelly' (*Ossifraga gigantea*), although no such jealousy exists at sea. From this habit of flying only by night it is called 'Night Hawk' by the sealers.

"Mr. Harris's party, when wrecked on Kerguelen's Land, used to dig these birds out of their burrows and eat them; and, in order to save useless digging, for their spades were only made from the staves of old casks, they would hold one to the mouth of a hole and make it cry out, when, if another was inside, it would answer. This is by far the best diver of all the sea-going Petrels. It seems even fond of it, and moreover remains under water for several minutes, when it comes up again, shaking the water off its feathers like a dog. Sometimes I have seen it poise itself for a moment in the air at a height of about twenty or twenty five feet above the sea, and, shutting its wings, take a header into the water. It dives with its wings open, and uses them under water much in the same manner as when flying."

Little or no difference is observable in the sexes, but the female is rather smaller than the male; neither did I observe any of the individuals that surrounded the ship to be of a darker colour. In all probability, the young attain their normal colouring at their first moult. I quite agree with Captain Hutton in considering this bird to be allied to the members of the genus *Puffinus*.

Crown of the head, ear-coverts, nape and upper surface, tips of the tail-feathers, tips of the under tail-coverts, and the primaries dark brownish grey; throat, chest, and under surface white; irides dark brown; culmen and nostrils black; tip of the upper mandible blackish horn-colour; tomia whitish horn-colour; lower part of the under mandible blackish horn-colour; feet white, tinged with blue, the outer toe brownish black.

Genus PTERODROMA, *Bonaparte*.

Of this genus, which is intended to comprise the nearly uniformly coloured black Petrels of the Southern Ocean, there are at least three species which frequent the Australian seas, and which I believe are correctly named in the succeeding descriptions.

Sp. 627. PTERODROMA MACROPTERA.

GREAT WINGED PETREL.

Procellaria macroptera, Smith, Zool. of South Africa, Aves, pl. 52.

—— *brevirostris*, Less.

Ossifraga macroptera, Reichenb.

Pterodroma macroptera, Bonap. Consp. Gen. Av., tom. ii. p. 191,

Pterodroma, sp. 1.

I consider a bird I killed over the seas surrounding Tasmania, where it was tolerably abundant, and which differs from the next species in being of a larger size, having much longer wings and a greyer face, to be identical with the *P. macroptera* of Smith, and I therefore retain it under that appellation, in preference to assigning it a new name.

“This bird, when on the wing,” says Capt. Hutton, “looks very like a huge Swift. It is not by any means common, and I have only seen it east of the Cape of Good Hope. It is not found on Prince Edward Islands nor Kerguelen’s Land.”—*Ibis*, 1865, p. 286.

Sp. 628. PTERODROMA ATLANTICA, *Gould*.

ATLANTIC PETREL.

Procellaria atlantica, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 362.

—— *fuliginosa*, Banks, Forst. Draw., No. 93.

Pterodroma atlantica, Bonap. Consp. Gen. Av., tom. ii. p. 191, *Pterodroma*, sp. 2.

This species frequents both the Atlantic and the Pacific

Oceans, and no ship passes between our shores and the Cape of Good Hope without meeting it. Very considerable confusion exists in the writings of some of the older authors with regard to this bird. It is the *P. fuliginosa* of Forster's Drawings, No. 93 B, and the *P. fuliginosa* of Lichtenstein's edition of Forster's MSS., p. 23, which term cannot be retained, as it had already been applied by Latham to a very different bird from Otaheite; it is the *P. grisea* of Kuhl, but not of Linnæus, who has given the term to another species, consequently *grisea* must also be rejected; and hence I have been induced to give it a new appellation, and thereby prevent misapprehension for the future.

Male.—The whole of the plumage deep chocolate-black; bill and feet jet-black.

Total length $15\frac{1}{4}$ inches; bill $1\frac{5}{8}$; wing $11\frac{1}{2}$; tail 5; tarsi $2\frac{5}{8}$; middle toe and nail $2\frac{7}{8}$.

Sp. 629. PTERODROMA SOLANDRI, *Gould*.

SOLANDER'S PETREL.

Procellaria solandri, Gould in Proc. of Zool. Soc., part xii. p. 57.

Cookilaria solandri, Bonap. Consp. Gen. Av., tom. ii. p. 190, *Cookilaria*, sp. 3.

Of this remarkably robust and compact bird I shot a single individual in Bass's Straits on the 13th of March 1839, which the late John Natterer, to whom I showed the specimen, thought might possibly be identical with the bird figured in Banks's drawings, and to which Dr. Solander has affixed the term *melanopus*, an opinion in which I cannot concur; I have therefore named it in honour of that celebrated botanist. The specimen described below may possibly not be fully adult, as the dark colouring of the under surface only occupies the extreme tips of the feathers, the basal portions of which are snow-white.

Head, back of the neck, shoulders, primaries, and tail dark

brown; back, wing-coverts, and upper tail-coverts slate-grey, each feather margined with dark brown; face and all the under surface brown, washed with grey on the abdomen; bill, tarsi, toes, and membranes black.

Total length 16 inches; bill $1\frac{3}{4}$; wing 12; tail $5\frac{1}{2}$; tarsi $\frac{3}{4}$; middle toe and nail $2\frac{3}{8}$.

Genus *ÆSTRELATA*, *Bonaparte*.

The members of this well-marked genus, as might be expected from the length of their wings, have great powers of flight. In the delicate form and colour of their feet and legs they differ very considerably from the *Pterodromæ*. One species—*Æstrelata hasitata* (*Procellaria hasitata*, Temm.)—has been killed in England.

Sp. 630. *ÆSTRELATA LEUCOCEPHALA*.

WHITE-HEADED PETREL.

Procellaria leucocephala, Forst. Drawings, No. 98.

—— *lessonii*, Garn. Ann. des Sci. Nat., tom. vii. t. 4.

—— *vagabunda*, Sol. MSS.

Æstrelata leucocephala, Bonap. Consp. Gen. Av., tom. ii. p. 189,

Æstrelata, sp. 4.

Rhantistes lessoni, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Procellaria lessonii, Gould, Birds of Australia, fol., vol. vii. pl. 49.

While engaged in watching the movements of the several species of the great family of *Procellaridæ*, which at one time often and often surrounded the ships that conveyed me round the world, a bright speck would appear on the distant horizon, and, gradually approaching nearer and nearer, at length assumed the form of the White-headed Petrel, whose wing-powers far exceed those of any of its congeners; at one moment it would be rising high in the air, at the next sweeping comet-like through the flocks flying around; never,

however, approaching the ship sufficiently near for a successful shot, and it was equally wary in avoiding the boat with which I was frequently favoured for the purpose of securing examples of other species; but, to make use of a familiar adage, "the most knowing are taken in at last;" one beautiful morning, the 20th of February 1839, during my passage from Hobart Town to Sydney, when the sea was perfectly calm and of a glassy smoothness, this wanderer of the ocean came in sight and approached within three hundred yards of the vessel; anxious to attract him still closer, so as to bring him within range, I thought of the following stratagem:—a corked bottle, attached to a long line, was thrown overboard and allowed to drift to the distance of forty or fifty yards, and kept there until the bird favoured us with another visit, while flying round in immense circles; at length his keen eye caught sight of the neck of the bottle (to which a bobbing motion was communicated by sudden jerks of the string), and he at once proceeded to examine more closely what it was that had arrested his attention; during this momentary pause the trigger was pulled, the boat lowered, and the bird was soon in my possession.

The wings of the White-headed Petrel are longer and more arched than those of any other species of its size and weight, and it is consequently one of the boldest and most powerful fliers of the *Procellariidæ*. During flight the dark colouring of the wing shows very conspicuously, and presents the form of a W as seen in some other species: as is the case with most birds of powerful flight, its legs are thin and delicate.

Forehead, face, all the under surface, and tail white; hinder part of the head, back of the neck, and upper tail-coverts grey; back greyish brown; wings blackish brown; round and before the eye a mark of black; bill and irides black; tarsi and half the toes and webs flesh-white; the tips of the toes and webs black.

Sp. 631. *ÆSTRELATA MOLLIS*, *Gould*.

SOFT-PLUMAGED PETREL.

Procellaria mollis, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 363.

Rhantistes mollis, Bonap. Comp. Rend. de l'Acad. Sc., 1856.

Cookilaria mollis, Bonap. Consp. Gen. Av., tom. ii. p. 190, *Cookilaria*, sp. 4.

Procellaria mollis, Gould, Birds of Australia, fol., vol. vii. pl. 50.

This species flies in the greatest abundance between the 20th and 50th degrees of south latitude; but I observed it to be more numerous in the Atlantic than in the Pacific; and probably, like the other wandering members of this genus, it makes a circuit of the globe: although I have not seen it within sight of the shores of Australia, it doubtless occasionally visits them, for I observed it to be plentiful off the eastern end of the islands of St. Paul and Amsterdam. It is a species which will ever live in my memory, from its being the first large Petrel I saw after crossing the line, and from a somewhat curious incident that then occurred. The weather being too boisterous to admit of a boat being lowered, I endeavoured to capture the bird with a hook and line; and the ordinary sea-hooks being too large for the purpose, I was in the act of selecting one from my stock of salmon-flies, when a sudden gust of wind blew my hooks and a piece of parchment ten inches long by six inches wide, between which they were placed, overboard into the sea, and I was obliged to give up the attempt for that day; on the next I succeeded in capturing the bird with a hook I had still left, and the reader may judge of my surprise when on opening the stomach I there found the piece of parchment, softened by the action of the salt water and the animal juices to which it had been subjected, but so completely uninjured that it was dried and again restored to its original use when a further supply of flies could be procured.

Its powers of flight are considerable, and the action of its wings is very rapid.

The food, which appears to be precisely the same as that of the other Petrels, consists of mollusks, the fat of dead cetacea, small fish, &c.

The sexes are similar in colour, but the young differ from the adult in having all the under surface dark grey and the throat speckled with grey.

Crown of the head and all the upper surface slate-grey, the feathers of the forehead margined with white; wings dark brown; before and beneath the eye a mark of brownish black; face, throat, and all the under surface pure white, interrupted by the slate-grey of the upper surface advancing upon the sides of the chest and forming a faint band across the breast; centre tail-feathers dark grey; outer feathers greyish white, freckled with dark grey; bill black; tarsi, base of the toes and basal half of the interdigital membrane pale fleshy white, the remainder black.

Total length $13\frac{1}{2}$ inches; bill $1\frac{1}{8}$; wing $9\frac{3}{4}$; tail 5; tarsi $1\frac{5}{8}$; middle toe and nail $1\frac{7}{8}$.

Sp. 632. *ÆSTRELATA LEUCOPTERA*, Gould.

WHITE-WINGED PETREL.

Procellaria leucoptera, Gould in Proc. of Zool. Soc., part xii. p. 57.

Rhantistes leucoptera, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Cookilaria leucoptera, Bonap. Consp. Gen. Av., tom. ii. p. 190, *Cookilaria*, sp. 1.

Procellaria velox, Sol. MSS. ?

Procellaria cookii, Gould, Birds of Australia, fol., vol. vii. pl. 51.

I feel assured that this bird is different from the *P. cooki* of Mr. G. R. Gray. On comparing the specimens of both, now before me, I find that my bird, which was obtained while breeding on Cabbage Tree Island at the mouth of Port Stephen's Harbour, has a shorter and much stouter bill, a

much darker head, neck, and upper surface, and a uniform-coloured tail, whereas Mr. Gray's *P. cooki* has the inner webs of the outer tail-feathers snow-white. It is impossible to say to which of these two birds the *P. velox* of Solander's drawings has reference, and consequently that name will necessarily sink into a synonym.

The Australian seas abound with Petrels, the investigation of the various species of which, their habits and economy, as well as their places of abode, will serve to occupy the attention of ornithologists for years to come. It could scarcely be expected that a single voyage to Australia could add much to our knowledge of the subject; my readers must therefore be contented with little more than an illustration.

That, like the other members of the genus, it subsists upon small fishes, medusæ, and others of the lower marine animals, there can be no doubt.

I have been informed that this species breeds in abundance on one of the small islands near the mouth of the harbour of Port Stephen, in New South Wales, where my specimens were procured. I frequently saw it during my passage from Sydney to Cape Horn, but it was most numerous between the coast of Australia and the northern part of New Zealand. It is one of the most elegantly formed species of the genus, and is rendered conspicuously different from the rest of its congeners by its white abdomen and under wing-coverts, which show very conspicuously when the bird is on the wing, particularly when seen from beneath, as it frequently may be when the breeze is fresh or a gale rising; it seldom, however, even then mounts higher than the vane of the vessel.

The sexes do not differ in external appearance.

Crown of the head, all the upper surface, and wings dark slaty black; tail slate-grey; greater wing-coverts slightly fringed with white; face, throat, all the under surface, the base of the inner webs of the primaries and secondaries, and a line along the inner edge of the shoulder pure white; bill

black; tarsus and basal half of the interdigital membrane fleshy white; remainder of the toes and interdigital membrane black.

Total length 13 inches; bill 1 and 5 lines; wing $8\frac{1}{2}$; tail 4; tarsi $1\frac{1}{8}$; middle toe and nail $1\frac{3}{8}$.

Sp. 633. *ÆSTRELATA COOKI*, G. R. Gray.

COOK'S PETREL.

Procellaria velox, Sol. MSS. Banks's Icon. inedit., t. 16?

— *cooki*, G. R. Gray in Dieff. Trav. in New Zeal., vol. ii. p. 199.

This bird frequents the seas between Australia and New Zealand. Like the *Æ. leucoptera*, it is very delicately formed, and with that bird, the *Æ. mollis*, and the other species having flesh-coloured tarsi, forms a very natural division of the Procellariidæ or Petrels.

The following is Mr. Gray's description and admeasurements as given in the zoology of the voyage of the 'Erebus' and 'Terror,' and which will be seen to differ somewhat from the description and admeasurements of *Æ. leucoptera*.

"Grey above, with the apex of each feather narrowly margined, as well as their bases, white; oblong spot below each eye, wing-coverts, secondaries, and quills brownish black, with the basal portion of the inner webs of the two last white; the front cheeks, under wing-coverts, and the whole of the under part white; bill black; tarsi and knee brownish yellow; feet black, with the intermediate webs yellow.

"Total length $12\frac{1}{2}$ inches; bill, length 1 inch 7 lines, depth in middle $3\frac{1}{2}$ lines; wings $2\frac{1}{4}$ inches; tarsi 1 inch 2 lines."

Genus HALOBÆNA, *Is. Geoff. de St. Hilaire*.

The single species of this genus assimilates to the Prions in its outward appearance, but is, in my opinion, more nearly allied to the true Petrels.

Sp. 634. HALOBÆNA CÆRULEA.

BLUE PETREL.

Procellaria cœrulea, Gmel. Edit. of Linn. Syst. Nat., tom. i. p. 560.

Blue Petrel, Lath. Gen. Syn., vol. vi. p. 415.

Procellaria similis, Forst. Draw., No. 86.

—— *forsteri*, Smith, Zool. of S. Africa, Birds, pl. 54.

Halabæna cœrulea, Bonap. Compt. Rend. de l'Acad. Sci., tom. 1856.

Procellaria cœrulea, Gould, Birds of Australia, fol., vol. vii. pl. 52.

This bird may be distinguished from every other of the smaller Petrels by the conspicuous white tips of the centre tail-feathers. It is a very powerful flier, and I observed it in every part of the ocean I traversed between the 40th and 55th degrees of south latitude, both in the Atlantic and Pacific.

It is generally seen in company with the fairy-like *Prion turtur*, from which when on the wing it can scarcely be distinguished, unless it passes sufficiently near for the observer to note the more square form, and the white tips of the tail-feathers, which, as well as the silvery ends of the secondaries and scapularies, show very conspicuously. On my passage to Australia I first observed it in lat. 39° 23' S., long. 54° E.; as we proceeded it gradually increased in numbers, and was very plentiful off the coast of Tasmania; I also met with it in my passage from Hobart Town to South Australia and Sydney; and on my return to England in the beginning of May 1840, I observed it to be very abundant off the north-east coast of New Zealand; tolerably numerous on the 20th of May near Cape Horn, lat. 50° S., long. 90° W.; plentiful midway between Tristan d'Acunha and the coast of America;

and in the Atlantic on the 12th of June, lat. 41° S., long. $34\frac{1}{2}^{\circ}$ W., a few were still hovering round the ship.

The sexes are precisely alike.

Forehead, lores, cheeks, throat, centre of the chest, and all the under surface white; narrow space beneath the eye, shoulders, and the outer webs of the first primaries deep brownish black; back of the neck, sides of the chest, back, rump, wings and tail grey; the secondaries, scapularies, and six middle tail-feathers tipped with white; the two outer tail-feathers almost wholly white, and the shafts of all black; bill dull blackish brown, with a stripe of blue-grey along the lower part of the under mandible; tarsi and toes delicate blue; interdigital membrane flesh-white traversed by red veins.

Genus PUFFINUS, *Brisson*.

The Shearwaters, like many other portions of the family *Procellariidæ*, have been much subdivided, and what was but the other day a genus now constitutes a subfamily. The well-known *Puffinus anglorum* and the *P. obscurus* are regarded as typical *Puffini*, of which form a single species, *P. nugax*, is found in Australia; while the *P. brevicaudus* and *P. carneipes* are placed in the genus *Nectris*, and the *P. sphenurus* in *Thiellus*. The various members of these divisions differ slightly in their habits. They are all gregarious, and particularly during the breeding-season assemble in immense numbers.

Sp. 635. PUFFINUS NUGAX.

ALLIED PETREL.

Procellaria nugax, Sol. MSS.

Puffinus assimilis, Gould in Proc. of Zool. Soc., part v. p. 156.

— *nugax*, Bonap. Consp. Gen. Av., tom. ii. p. 205.

Puffinus assimilis, Gould, Birds of Australia, fol., vol. vii. pl. 59.

All the specimens of this species that I have seen were pro-

cured on Norfolk Island, where it is said to breed ; consequently the seas washing the eastern shores of Australia may be considered its native habitat ; it is evidently the representative of the *Puffinus obscurus* of Europe. On my homeward voyage from Australia I saw numerous examples flying off the north-eastern end of New Zealand, and this I regret to say is all the information I have to communicate respecting it.

I have received two beautiful snow-white eggs of this bird from Mr. Macgillivray ; they were collected on Royal Island in July 1854, and are two inches in length by one inch and three lines in breadth.

Crown of the head, all the upper surface, wings, and tail sooty black ; sides of the face, throat, and all the under surface white ; bill dark horn-colour ; tarsi and toes greenish yellow ; webs yellowish orange.

Total length 11 inches ; bill $2\frac{5}{8}$; wing $6\frac{1}{2}$; tail 3 ; tarsi $1\frac{1}{4}$.

Genus NECTRIS, *Bonaparte*.

The members of this genus inhabiting Australia are two in number, both of which make one or other of the groups of islands lying off the coast their great nurseries or breeding-places. They are distinguished by their ample wings and very short tails, and by the uniform dark colouring of their plumage.

Sp. 636. NECTRIS BREVICAUDUS.

SHORT-TAILED PETREL.

Puffinus brevicaudus, Brandt, Icon. Rossic. Av., tab. 6. fig. 17.

Priofinus brevicaudus, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Nectris brevicaudus, Bonap. Consp. Gen. Av. tom. ii. p. 201 ; *Nectris*, sp. 1.

Mutton-bird of the Sealers.

Puffinus brevicaudus, Gould, Birds of Australia, fol., vol. vii. pl. 56.

This bird is an inhabitant of the seas surrounding Tasma-

nia and the islands in Bass's Straits, to some of which, but especially to Green Island, it resorts during the summer in countless numbers for the purpose of breeding and rearing its young. I visited this island in January 1839, when, although the season was far advanced, both eggs and young were still so numerous as to excite my astonishment. I had previously heard much of this great nursery of Petrels, and might have added much to the length of this paper by recording my own observations; but so much has been written by others, that I prefer giving their statements, notwithstanding a little repetition in the details comprised therein. Mr. Davies, in the second volume of the 'Tasmanian Journal,' states that "About the commencement of September these birds congregate in immense flocks, and shortly afterwards proceed at sunset to the different isles upon which they have established their rookeries. Here they remain during the night for the space of about ten days, forming their burrows and preparing for the ensuing laying-season. They then leave, and continue at sea for about five weeks.

"About the 20th of November at sunset a few come in to lay, and gradually increase in numbers until the night of the 24th. Still there are comparatively few, and a person would find some difficulty in collecting two dozen eggs on the morning of that day.

"It is not in my power to describe the scene that presents itself at Green Island on the night of the 24th of November. A few minutes before sunset flocks are seen making for the island from every quarter, and that with a rapidity hardly conceivable; when they congregate together, so dense is the cloud, that night is ushered in full ten minutes before the usual time. The birds continue flitting about the island for nearly an hour and then settle upon it. The whole island is burrowed; and when I state that there are not sufficient burrows for one-fourth of the birds to lay in, the scene of noise and confusion that ensues may be imagined—I will not

attempt to describe it. On the morning of the 25th the male birds take their departure, returning again in the evening, and so they continue to do until the end of the season.

. . . . Every burrow on the island contains, according to its size, from one to three or four birds, and as many eggs; *one* is the general rule. At least three-fourths of the birds lay under the bushes, and the eggs are so numerous, that great care must be taken to avoid treading upon them. The natives from Flinders generally live for some days on Green Island at this time of the year for the purpose of collecting the eggs, and again in March or April for curing the young birds. . . . Besides Green Island, the principal rookeries of these birds are situated between Flinder's Island and Cape Barren, and most of the smaller islands in Furneaux's group. The eggs and cured birds form a great portion of the food of sealers, and, together with the feathers, constitute the principal articles of their traffic. The mode by which the feathers are obtained has been described to me as follows:—

“The birds cannot rise from the ground, but must first go into the water; in effecting which, they make numerous tracks to the beach similar to those of a kangaroo; these are stopped before morning, with the exception of one leading over a shelving bank, at the bottom of which is dug a pit in the sand; the birds, finding all avenues closed but this, follow each other in such numbers, that, as they fall into the pit, they are immediately smothered by those succeeding them. It takes the feathers of forty birds to weigh a pound; consequently sixteen hundred must be sacrificed to make a feather-bed of forty pounds weight. Notwithstanding the enormous annual destruction of these birds, I did not, during the five years that I was in the habit of visiting the Straits, perceive any sensible diminution in their number. The young birds leave the rookeries about the latter end of April, and form one scattered flock in Bass's Straits. I have actually sailed through them

from Flinder's Island to the heads of the Tamar, a distance of eighty miles. They shortly afterwards separate into dense flocks, and finally leave the coast. The old birds are very oily, but the young are literally one mass of fat, which has a tallowy appearance, and hence I presume the name of Mutton Bird." To this I may add that the young birds are very good when fresh, and the old birds after being skinned and preserved in lime are excellent eating.

It will be seen that I have alluded in forcible terms to the great abundance of this species, in confirmation of which I annex the following extract from Flinder's Voyage, vol. i. p. 170:—

"A large flock of Gannets was observed at daylight, and they were followed by such a number of the Sooty Petrels as we had never seen equalled. There was a stream of from fifty to eighty yards in depth, and of three hundred yards or more in breadth; the birds were not scattered, but were flying as compactly as a free movement of their wings seemed to allow; and during a full *hour and a half* this stream of Petrels continued to pass without interruption, at a rate little inferior to the swiftness of the Pigeon. On the lowest computation I think the number could not have been less than a hundred millions. Taking the stream to have been fifty yards deep by three hundred in width, and that it moved at the rate of thirty miles an hour, and allowing nine cubic yards of space to each bird, the number would amount to 151,500,000. The burrows required to lodge this quantity of birds would be 75,750,000; and allowing a square yard to each burrow, they would cover something more than $18\frac{1}{2}$ geographic square miles of ground."

The following highly interesting note respecting this species is from the personal observation of R. Elwes, Esq., of Norfolk, and is here transcribed in confirmation of the statements given above, and to show that even so recently as 1859 the bird appeared to be as numerous as ever:—

“ The little settlement on Vansittart’s or Gun-carriage Island, one of the Flinder’s Islands group in Bass’s Straits, lies in a cove, on one side sandy, but on the other closed in by huge granite rocks, behind which the sealers have built their houses, and which serve also to shelter their boats from the sea. Tucker’s (the chief settler’s) house was comfortable enough. His wife was a Hindoo woman from Calcutta, active and industrious, who kept it in good order. The other men had native wives or ‘ gins,’ as they called them, from Australia and Van Diemen’s Land.

“ Their original occupation was sealing, for these islands formerly swarmed with seals. In the course of time these animals became exterminated, and now their principal livelihood is derived from the Mutton-birds, which are found here in incredible numbers. These birds, called also Sooty or Short-tailed Petrels (*Puffinus brevicaudus*, Gould, B. Austr. vii. pl. 56), have such long wings that, like the Albatros, the largest of their tribe, they have great difficulty in rising from the ground when settled ; and it is this peculiarity that makes their capture so easy. They build in holes in the ground. The islands which they frequent are burrowed over in all directions, just like a rabbit-warren. They arrive in huge flocks about the 21st of September, generally to the day, to prepare their holes and clean them out. There is tremendous fighting and quarrelling for these holes. When the birds have arrived a few days, their tracks or pathways begin to be apparent, or, as the sealers say, ‘ they begin to show their runs,’ for they go down to the sea every morning. The sealers then dig a large pit in one of the main runs, with small fences on each side, leading down to it like a funnel. When all is ready, some morning at daybreak, when the birds come out of their holes, they are driven down these runs into the pitfall. ‘ We rushes ’em down, sir, and they all tumbles over one another into the hole,’ was the way the men expressed it. They crowd down and fall in by hundreds, crushing and smothering

each other until the pit is full, when the men break down the fence at the sides and let the rest escape. They generally take 2000 to 2200 in each drive. The men then jump into the hole and set to work to pick them, pulling off the body-feathers and stuffing them into bags, and throwing the carcasses out of the hole. This lasts till noon. It is hard work, and before the end of the season their nails sometimes come off from the continual plucking. It takes the feathers of twenty-five birds to make a pound, which sells at Launceston for twopence; but Tucker, his wife, and his pal, Dick, collected a ton of feathers last year. To do this they must have killed 56,000 birds; and yet they say their numbers do not seem to decrease. The birds come back to the islands again on the 23rd of November to lay. They lay but one egg, and generally on the day or the day after they arrive. The sealers collect a good many for their use; and when the young birds are nearly full-grown, they attack them again for the sake of the oil with which the old birds feed them. They thrust their hands into the hole, pull out the young bird by the head, kill it by squeezing it, and, holding it up by the legs, the oil runs out at the beak. This oil is very clean and pure, burns well, and sells at Launceston at four shillings per gallon. When the young birds are full-grown, they are very fat. The men then pull them out of their holes, spit them, and salt them. It is rather dangerous work catching them in this way, for many venomous snakes dwell in the holes, and are sometimes seized and pulled out instead of a bird."—*Ibis*, 1859, p. 397.

The egg is very large for the size of the bird, being two inches and three-quarters long by one inch and seven-eighths broad, and is of a snow-white. The white or albumen forms a very large proportion of its contents; and it is remarkable that a small part of both the yolk and the white remains soft and watery, however long the egg may be boiled.

The food of the old birds consists of shrimps, small crustaceans and mollusks, which they principally procure from

among the large beds of kelp along the coast. The young are fed with grass, sea-weed, &c.

The flight of this and the other species of *Puffinus* differs considerably from that of the *Procellariæ* in being straighter and performed close above the surface of the water ; it is moreover so exceedingly rapid, that Mr. Davies states it cannot be fairly estimated at less than sixty miles an hour.

The sexes are so much alike that they can only be distinguished by dissection.

The whole of the plumage sooty brown, the under surface much paler than the upper ; bill blackish brown tinged with olive ; the under mandible with a longitudinal mark of vinous grey ; irides brownish black ; outer side of the tarsi and outer toe brownish black ; inner side of the tarsi and two inner toes vinous grey ; webs yellowish flesh-colour, becoming blackish brown towards the extremity.

Sp. 637. **NECTRIS CARNEIPES**, *Gould*.

FLESHY-FOOTED PETREL.

Puffinus carneipes, Gould in Proc. of Zool. Soc., part xii. p. 57.

Majaqueus carneipes, Reich. Syst. av., tab. xxiv. fig. 2601.

Priofinus carneipes, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Nectris carneipes, Bonap. Consp. Gen. Av., tom. ii. p. 201 ; *Nectris*, sp. 2.

Puffinus carneipes, Gould, *Birds of Australia*, fol., vol. vii. pl. 57.

This species of Petrel flies over the seas bordering the southern and western coasts of Australia, and resorts among other places to the small islands off Cape Leeuwin for the purpose of breeding ; it was here that the specimens and eggs contained in my collection were procured. It differs from the *Nectris brevicaudus* in the greater length and in the more square form of its tail, and in the light or fleshy colour of its bill and legs.

Its single white egg is about two inches and seven-eighths long by nearly two inches wide.

There is no difference in the colouring of the sexes, which may be thus described:—

The whole of the plumage chocolate-black; bill fleshy white, the culmen and tips of the mandibles brown; legs, feet, and interdigital membranes yellowish flesh-colour.

Total length 15 inches; bill $1\frac{3}{4}$; wing 12; tail 5; tarsi 2; middle toe and nail $2\frac{1}{2}$.

Genus THIELLUS, *Gloger*.

Bonaparte places in this genus the bird I have characterized as *Puffinus sphenurus* and the *P. chlororhynchus* of Lesson. These birds are slender in form and have long and pointed tails. The former, if not both these birds, frequent the Australian seas.

Sp. 638. THIELLUS SPHENURUS, *Gould*.

WEDGE-TAILED PETREL.

Puffinus sphenurus, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 365.

Thiellus sphenurus, Bonap. Compt. Rend. de l'Acad. Sci., tom. 1866.

Puffinus sphenurus, Gould, Birds of Australia, fol., vol. vii. pl. 58.

This species was procured by Gilbert on the Houtmann's Abrolhos, off the western coast of Australia; he also observed it on all the neighbouring sandy islands, but on none was it more abundant than on West Wallaby Island, which appears to be one of its chief breeding-places, and where it burrows to a considerable distance before depositing its egg. Mr. Macgillivray also procured specimens of this bird on Lord Howe's Island; we may therefore infer that it frequents the seas washing the whole of the southern portion of Australia.

Its single white egg is two inches and three-quarters long by one and three-quarters wide.

All the upper surface dark chocolate-brown, which gradually deepens into black on the primaries and tail; feathers of the scapularies, which are very broad in form, washed with lighter brown at their tips; face and throat dark brownish grey, the remainder of the under surface greyish brown; bill reddish fleshy brown, darker on the culmen and tip; legs and feet yellowish flesh-colour.

Total length $15\frac{1}{2}$ inches; bill $1\frac{5}{8}$; wing $11\frac{1}{2}$; tail 6; tarsi $1\frac{7}{8}$; middle toe and nail $2\frac{3}{8}$.

Genus THALASSOICA, *Reichenbach*.

The delicately coloured Petrel, for which the above generic name has been proposed, differs from all its congeners, and I therefore concur in the propriety of its separation. It is nearly allied to *Fulmarus*.

Sp. 639. THALASSOICA GLACIALOIDES.

SILVERY-GREY PETREL.

Procellaria glacialis, Smith, Zool. of South Africa, Aves, pl. 51.

Thalassoica glacialis, Reich. Syst. Av., tab. xxi. fig. 789, et tab. 25. figs. 2608, 2609.

Procellaria glacialis, Gould, Birds of Australia, fol., vol. vii. pl. 48.

During my passage to and from Australia I saw numerous examples of this bird, both in the Atlantic and Pacific. I first met with it off the Cape of Good Hope, and it was frequently seen from thence across the South Indian Ocean to New South Wales; I subsequently observed it between Sydney and Cape Horn; it was numerous off the Falkland Islands, and I have a specimen killed on the shores of New Zealand. One of the finest examples I possess was captured

with a hook and line, and thus afforded Mrs. Gould an opportunity of making a beautiful drawing from life. It was a species which particularly interested me while at sea, as much for its familiar habits as for its peculiar actions and mode of flight: with the exception of the Cape Petrel (*Daption capensis*), no species was more readily taken with a baited hook. Like that bird it has very broad primaries, giving an appearance of great breadth to the end of the wing, has the same number of feathers (14) in the tail, and the nostrils placed in a single tube.

The late Sir Andrew Smith, who was the first to discriminate the characters which distinguish this species, remarks that, "In many respects it has a strong resemblance to the *Procellaria glacialis* of authors; the length of the bill, however, is not only greater, but the thickness is also different, being inferior to that of *P. glacialis*, and neither are ever otherwise in any individual of the Cape species It often hunts for its food in the neighbourhood of the South African coasts, and even frequently enters the bays, apparently for the same purpose. It flies higher above the surface of the water than the smaller species, rests more frequently and seems well-disposed to feed upon dead animal matter, when such can be procured."

All the upper surface and tail delicate silvery grey; outer webs, shafts, a line along the inner webs, and the tips of the primaries and the outer webs of the secondaries slaty black; face and all the under surface pure silky white; irides brownish black; nostrils, culmen, and a portion of the base of the upper mandible bluish lead-colour; tips of both mandibles fleshy horn-colour, deepening into black at their points; remainder of the bill pinky flesh-colour; legs and feet grey, washed with pink on the tarsi and blotched with slaty black on the joints.

Genus DAPTION, *Stephens*.

A genus established for the reception of the *Procellaria capensis* of Linnæus, a species abounding in all the temperate latitudes of the southern seas.

Sp. 640. DAPTION CAPENSIS.

CAPE PETREL.

Procellaria capensis, Linn. Syst. Nat., tom. i. p. 213.

Procellaria nævia, Briss. Orn., tom. vi. p. 146.

Le Petrel tacheté, ou le Damier, Buff. Hist. des Ois., tom. ix. pl. 304, pl. 21.

White- and Black-spotted Petrel, Edw. Glean., pl. 90.

Pintado Petrel, Lath. Gen. Syn., vol. vi. p. 401.

Daption capensis, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 241, pl. 28.

Cape Pigeon and Cape Petrel of Voyagers.

Daption capensis, Gould, Birds of Australia, fol., vol. vii. pl. 53.

This species of Petrel is well known to every person who has visited the southern hemisphere; for it is equally common in the Atlantic and Pacific, and is nowhere more numerous than off the south coast of Tasmania; it may, in fact, be said to inhabit the temperate latitudes of all the seas above-mentioned, and to be without exception the most familiar species of Petrel the voyager meets with. From the circumstance of individuals which have been caught, marked and again set at liberty, having been found to follow vessels for hundreds of miles for the sake of the offal thrown overboard, no doubt exists in my mind that it constantly circumnavigates the globe. During my passage from Hobart Town to Sydney and from Sydney to Cape Horn, on my return to England, it was a constant attendant on the ship. It is frequently seen close to the vessel, and if fed with any oily substance, it may during a calm be attracted to within three yards of the ship's side. When other resources of amusement fail, the cap-

turing of this bird frequently affords the passengers occupation for hours together, and often serves to break the monotony of a lengthened voyage. It is said to breed on the island of South Georgia, and Sir James Ross saw flocks of young birds, in January 1841, in $71^{\circ} 50' \text{ S.}$, near South Victoria. The following notes were made during my passages out and home, and are worth transcribing, as they record some of the latitudes and longitudes in which the bird was seen, and the date of the observations :—

“ July 27, 1838, lat. $26^{\circ} 54' \text{ S.}$, long. $31^{\circ} 25' \text{ W.}$.—Saw the first Cape Petrel, and from this date until we doubled the Cape of Good Hope it paid daily visits to the ship, sometimes in considerable numbers, at others only two or three appeared.

“ August 18.—Off the island of St. Paul. Cape Petrels very plentiful.

“ September 8.—Off King George’s Sound. Cape Petrels still very numerous.

“ May 6, 1840, lat. 40° S. , long. 154° W. .—Two Cape Petrels hovering round the ship, the first of the species seen since leaving Sydney.

“ May 20.—Off Cape Horn, lat. 50° S. , long. 90° W. Cape Petrels very abundant.

“ This Martin among the Petrels is extremely tame, passing immediately under the stern and settling down close to the sides of the ship, if fat of any kind or other oily substance be thrown overboard. Swims lightly, but rarely exercises its natatorial powers except to procure food, in pursuit of which it occasionally dives for a moment or two. Nothing can be more graceful than its motions while on the wing, with the neck shortened, and the legs entirely hidden among the feathers of the under tail-coverts. Like the other Petrels, it ejects, when irritated, an oily fluid from its mouth. Its feeble note of “cac, cac, cac, cac” is frequently uttered, the third, says Captain Hutton, being pronounced the quickest. Its weight varies from fourteen to eighteen ounces: there is

no difference in the weight of the sexes, neither is there any visible variation in their colouring, nor do they appear to be subject to any seasonal change."

Head, chin, back and sides of neck, upper part of the back, lesser wing-coverts, edge of the under surface of the wing, and the primaries sooty brown; wing-coverts, back, and upper tail-coverts white, each feather tipped with sooty brown; basal half of the tail white, apical half sooty brown; under surface white; the under tail-coverts tipped with sooty brown; beneath the eye a small streak of white; bill blackish brown; irides and feet very dark brown.

Genus PRION, *Lacépède*.

At least four species of this form frequent the seas washing the southern parts of Australia. These fairy-like birds are individually very numerous, for I have seen them in flocks of thousands. They are truly oceanic birds, seldom if ever nearing land except for the purpose of breeding, when they take up their abode on the most isolated spots, such as St. Paul, Amsterdam, Tristan d'Acunha, Prince Edward Islands, Kerguelen's Land, &c. Their broad laminated bills are evidently formed for procuring some peculiar kind of food, of which doubtless the lower sea-creatures known as *Medusæ* form a part. Besides the singular form of their bills, their delicate grey colouring at once distinguishes them from the rest of the Petrels. Generally speaking, this is a southern form, but one species has occurred north of the line, and in our own seas. The species alluded to is the *P. brevirostris*, so named by me at the meeting of the Zoological Society of London held on the 12th of June 1855, and for a knowledge of which I was indebted to my late friend William Yarrell, who informed me it had been captured on the Island of Madeira or on the neighbouring rocky islets called the Desertas. The sexes present no external difference either in colour or size.

Sp. 641.

PRION TURTUR.

DOVE-LIKE PRION.

Procellaria turtur, Banks's Drawings, No. 15.*Prion turtur*, Gould in Ann. and Mag. of Nat Hist., vol. xiii. p. 366.*Whale Bird of the Sailors.*

Prion turtur, Gould, *Birds of Australia*, fol., vol. vii. pl. 54.

So much confusion exists among the species of this genus of Petrels, that a very minute examination has been required to identify those described by the older writers, and it has been with no little attention and care on the part of the late John Natterer and myself that we came to the conclusion that the bird forming the subject of the 54th plate in the seventh volume of my folio edition is the one for which the specific name of *turtur* should be retained. Of the four species inhabiting the southern seas, the present is the most delicate in colour, as well as the most slender and elegant in form; its bill is much less dilated at the base, and has the laminae much less developed than those of the *P. banksii*, to which it is nearly allied, and with which it is sometimes seen in company. I find by my notes that I killed four specimens off Cape Howe on the 16th of April, during my passage from Tasmania to Sydney; and I have but little doubt that it traverses the whole surface of the Atlantic and Pacific Oceans, between the 30th and 50th degrees of south latitude, having seen and frequently killed specimens while sailing within those prescribed limits. Sometimes it appeared in countless multitudes, but more often thinly dispersed over the surface of the ocean. During calms it flits over the glassy waters with a noiseless and easy flight, often performing small circles, and fluttering butterfly-like over any oily substance thrown overboard, which it sips off the surface without settling; occasionally, however, it rests its buoyant and fairy little body on the waters, where it reposes at perfect ease, until hunger again impels it to take wing in search of food. A more vigorous and active action of

the wing being necessary to sustain it during the raging of the gale, it then moves with zigzag turns of great swiftness, ascending the billows, topping their surgy summits, and descending into the gulf between, where a momentary shelter enables it to gain fresh vigour, and seize from the slanting surface any floating mollusks that may present themselves, and which, from the disturbed state of the sea, are apparently more abundant then than at other times.

The plumage of all the members of this genus is dense, thick, and extremely light; hence their bodies are much smaller than they appear to be. The average weight of several examples of this species was five ounces. Although the present bird and *Prion banksii* were seen in company, as before stated, the differences between the two were very observable, the extreme delicacy of colouring and the smaller size of the *P. turtur* strongly contrasting with the more bluff and darker-coloured head of the *P. banksii*; when the wings were expanded, the black mark, similar to the letter W, was equally conspicuous in both.

All the upper surface delicate blue-grey; the edge of the shoulder, the scapularies, outer margins of the external primaries and the tips of the middle tail-feather black; small spot before the eye and a stripe beneath black; lores, line over, beneath, and behind the eye and all the under surface white, stained with blue on the flanks and under tail-coverts; bill light blue, deepening into black on the sides of the nostrils and at the tip, and with a black line along the side of the under mandible; irides very dark brown; feet beautiful light blue.

Sp. 642.

PRION ARIEL, *Gould*.

FAIRY PRION.

Prion ariel, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 366.

This is one of the smallest species of the genus, being much less than *P. turtur* and its near ally the *P. brevirostris* of the

Madeiran seas. Like *P. turtur*, the pectination of the bill is not discernible when that organ is closed.

I procured several examples of this bird in Bass's Straits on the 16th of April 1839, when many were flying around me. In colour and general appearance it resembles *P. turtur*, except that it has a white face or no grey mark before the eye; but not in its admeasurements, which are as follows :—

Total length 9 inches; bill $1\frac{1}{8}$; wing $6\frac{3}{4}$; tail $3\frac{3}{8}$; tarsi $1\frac{1}{8}$.

Sp. 643.

PRION BANKSII.

BANKS'S PRION.

Pachyptila banksii, Smith, Zool. of South Africa, Aves, pl. 55.

Prion banksii, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 366.

This species is constantly seen in all the south seas. In breadth its bill is intermediate between that of *P. turtur* and that of *P. vittatus*; it is, moreover, of a lengthened and somewhat elegant form, and exhibits the pectination of the mandibles when the bill is closed.

In colour this species assimilates to the other members of the genus.

Sp. 644.

PRION VITTATUS.

BROAD-BILLED PRION.

Pachyptila vittata, Ill. Prod. Syst. Mamm. et Av., p. 275.

Procellaria vittata, Forst. Draw., No. 86.

— *forsteri*, Lath. Ind. Orn., vol. ii. p. 827.

Prion vittatus, Lacép. and Cuv.

Pachyptila forsteri, Swains. Class. of Birds, vol. ii. p. 374.

Prion vittatus, Gould, Birds of Australia, fol., vol. vii. pl. 55.

This species of *Prion* is very plentiful in the South Indian Ocean. I observed it on my outward passage to Tasmania, near the islands of Amsterdam and St. Paul. I never met with it in the South Atlantic, although, in all probability, like

most of the other Petrels, it makes in the course of its peregrinations a circuit of the globe. The seas washing the coasts of Tasmania, New Zealand, and the Auckland Islands are the localities whence most of the specimens in our museums have been obtained.

This bird is rather larger than the last species. Its bill is much dilated, and the pectinations are very conspicuous, and doubtless perform some important function in the economy of the bird, but for what particular purpose these appendages to the bill are intended has not yet been ascertained. Its powers of flight and mode of life are very similar to those of the *Prion turtur* and *P. banksii*, as detailed in the description of those species. I believe that the sexes present little or no difference in size or plumage, but I have not had an opportunity of satisfactorily determining this point; had any existed, however, it is not likely that it would have escaped the notice of those ornithologists who have from time to time examined the members of this group.

Mr. Macgillivray sent to England two very fine eggs of this bird which he collected on the Island of St. Paul, in the Indian Ocean. They are pure white, and somewhat lengthened in form, being two inches long by one and a half broad.

All the upper surface delicate blue-grey; the edge of the shoulder, the scapularies, outer primaries, and tips of the middle tail-feathers black; space surrounding the eye and the ear-coverts black; lores, line over the eye, and all the under surface white, stained with blue on the flanks and under tail-coverts; bill light blue, deepening into black on the sides of the nostrils and at the tip, and with a black line along the side of the under mandible; irides very dark brown; feet beautiful light blue.

There is another and broader billed species than *P. vittatus*, but the precise latitudes in which this fine bird flies is unknown to me.

Genus PROCELLARIA, *Linnaeus*.

The little tenants of the ocean, which we have known of late years under the generic title of *Thalassidroma*, but for which I believe the term *Procellaria* was first proposed, are so universally dispersed, that they are found in all the seas except those of the very high latitudes of both hemispheres. The Australian avi-fauna is particularly rich in birds of this form, inasmuch as no less than five distinct species frequent the seas which wash the shores of that country.

They have now been divided into several genera, *P. pelagica* and my *P. nereis* being a typical species of the restricted genus *Procellaria*.

Sp. 645. PROCELLARIA NEREIS, *Gould*.

GREY-BACKED STORM-PETREL.

Thalassidroma nereis, Gould in Proc. of Zool. Soc., part viii. p. 178.
Procellaria nereis, Bonap. Consp. Gen. Av., tom. ii. p. 196; *Procellaria*,
sp. 1.

Thalassidroma nereis, Gould, Birds of Australia, fol., vol. vii.
pl. 64.

During a calm which occurred on my passage from Hobart Town to Sydney in May 1839, I obtained four examples of this species of Petrel, and I subsequently observed it flying about in considerable numbers near the eastern entrance of Bass's Straits; I also met with it on my passage home to England in April 1840, between New South Wales and the northernmost point of New Zealand; further than this I have little to communicate respecting it.

The *Procellaria nereis* is a species readily distinguishable from its congeners by the total absence of any white mark on the rump, the want of which first drew my attention and induced me to suspect it, as it subsequently proved to be, a different species from any I had before seen; my readers

will therefore easily imagine with what pleasure I descended the ship's side and sallied forth in a little 'dingy' to procure specimens. This is not the only instance in which science has been benefited through the kindness of the captains I have sailed with in allowing me the use of a boat whenever the weather permitted such a favour to be granted me without retarding the progress of the ship. Nearly thirty species of oceanic birds were obtained in this way during my voyage to Australia; whence some idea may be formed of the numbers encountered in the open sea, and of the employment the naturalist may find during a voyage round the globe.

In the habits and mode of flight of this species I could observe no difference whatever from those of the other Storm-Petrels; and, as a matter of course, its food is also similar; any oily substance, together with mollusks, being equally partaken of by all the members of the genus.

I did not observe this species in any other parts of the ocean than those mentioned above; at the same time it is not improbable that it may possess a much wider range.

The sexes are alike in plumage, and are not materially different in size.

Head, neck, and chest sooty grey; lower part of the wing-coverts, back, rump, and upper tail-coverts grey, each feather very slightly margined with white; wings greyish black; tail grey, broadly tipped with black; under surface pure white; irides, bill, and feet black.

Total length $6\frac{1}{2}$ inches; bill $\frac{9}{18}$; wing $5\frac{1}{4}$; tail $2\frac{1}{2}$; tarsi $1\frac{1}{4}$.

Note.—It would be well if naturalists accompanying expeditions to the South Pacific and South Indian Oceans were to collect examples of this species, as but few of our museums possess it.

Genus OCEANITES, *Keyserling et Blasius*.

Two or three species of this genus are all that are known. Modern research tends to prove that the Australian bird, which I believed to be identical with the American *O. wilsoni*, is distinct from that bird, and that it is identical with the *Procellaria oceanica* of Banks, a view which I here adopt.

Sp. 646. OCEANITES OCEANICA.

YELLOW-WEBBED STORM-PETREL.

Procellaria oceanica, Banks.—Forst. Draw., No. 12.

Thalassidroma oceanica, Kuhl, Brit. Zool. Monog. Proc., p. 136, tab. 10. fig. 1.

Oceanites wilsoni, Keys. et Blas. Wirb. Eur., tom. ii. p. 238.

Thalassidroma wilsonii, Gould, Birds of Australia, fol., vol. vii. pl. 65.

This is also one of the most abundant species of the genus inhabiting the Australian seas: I observed it in great numbers within sight of the shores of Tasmania, and shot and preserved several specimens during my passage from Sydney to Hobart Town in April 1839; I also encountered it in the following year in the seas between Sydney and New Zealand, while on my passage towards Cape Horn.

It is exceedingly active when flying, its wings being kept fully expanded; it also makes considerable use of its feet, in patting the surface of the water, with its wings extended upwards and its head inclined downwards, to gather any food that may present itself. Its usual diet consists of mollusca, small fish, crustacea, and any kind of greasy substance that may be floating on the water.

The sexes are so precisely similar that they can only be distinguished by dissection.

The head, neck, back, wings, and breast sooty black, the wing-coverts passing into pale brown at the extremity; pri-

maries and tail black ; upper and lateral portions of the under tail-coverts white ; irides dark brown ; bill and feet black ; webs yellow for three parts of their length from the base.

Genus FREGETTA, *Bonaparte*.

The members of this genus are distinguished by their large size, long legs, and parti-coloured plumage. Two species frequent the seas surrounding Australia.

Sp. 647. FREGETTA MELANOGASTER, *Gould*.

BLACK-BELLIED STORM-PETREL.

Procellaria fregata, Forst. Draw. 13? and 14.

—— *grallaria*, Licht. Verz. der Doubl. Mus. Berl., p. 83.

—— *oceanica*, Bonap., 1827, Zool. Journ., vol. iii. p. 89.

Thalassidroma melanogaster, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 367.

Fregetta melanogastra, Bonap. Consp. Gen. Av., tom. ii. p. 198, *Fregetta*, sp. 4.

Thalassidroma melanogaster, Gould, Birds of Australia, fol. vol. vii. pl. 62.

My acquaintance with this species commenced on the 12th of August 1839, when off Cape Lagulhas on my voyage to Australia, and from that date it was almost daily observed during our transit across the South Indian Ocean until we arrived at Tasmania on the 19th of September ; its numbers gradually increasing from the neighbourhood of the islands of St. Paul and Amsterdam to the termination of the voyage. In March 1840, during my passage home, I again met with it in great abundance between the eastern coast of Australia and New Zealand.

When viewed from the ship, it is at once distinguished from all the other Petrels by the broad black mark which passes down the centre of the abdomen, and offers a strong contrast to the snowy whiteness of the flanks.

It is a bird of powerful flight, and pats the surface of the rising waves more frequently than any other species that came under my notice, or perhaps the great length of its legs rendered this action more conspicuous; its habits and general economy are of course very similar to those of the other members of the genus.

All the plumage deep sooty black, with the exception of the upper tail-coverts and flanks, which are snow-white; bill, legs, and feet black.

Total length $7\frac{1}{2}$ inches; bill $\frac{3}{4}$; wing 6; tail 3; tarsi $1\frac{5}{8}$; middle toe and nail $1\frac{1}{4}$.

Sp. 648. **FREGETTA GRALLARIA.**

WHITE-BELLIED STORM-PETREL.

Procellaria fregata, Kuhl, Brit. Zool. Mon. Proc., tab. 10. fig. 2.

— *grallaria*, Vieill. Ency. Méth., part i. p. 344.

Thalassidroma oceanica, Bonap. Gen. et Syn. Am. Birds in Ann. Lyc. New York, vol. ii. p. 449.

Fregetta grallaria, Bonap. Consp. Gen. Av., tom. ii. p. 197, *Fregetta*, sp. 2.

Thalassidroma leucogaster, Gould in Ann. and Mag. of Nat. Hist., vol. xiii. p. 367.

Thalassidroma leucogaster, Gould, Birds of Australia, fol., vol. vii. pl. 63.

This bird is about the same size as the *Fregetta melanogaster*, but possesses two characters by which it may at all times be distinguished from it: namely, the total absence of black down the centre of the abdomen, and the shortness of its toes. I observed it to be very generally distributed over the South Indian Ocean, and I have reason to believe that it ranges over all the temperate latitudes between the Cape of Good Hope and Cape Horn, and it is not unlikely that it may inhabit similar latitudes in the South Atlantic. I killed specimens of a nearly allied species within the tropics of the

South Atlantic, which differed in being of a larger size, and in having a patch of greyish white on the throat; these differences will doubtless prove it to be a distinct species, and I mention this in order that the two birds might not be confounded by subsequent voyagers or writers on the subject. I have presented a specimen of the larger species, killed by myself at the Equator, to the British Museum, where it is always accessible for comparison and other scientific purposes.

Like the *F. melanogaster*, the White-bellied Storm-Petrel is a fine and powerful species, fluttering over the glassy surface of the ocean during calms with an easy butterfly-like motion of the wings, and buffeting and breasting with equal vigour the crests of the loftiest waves of the storm; at one moment descending into their deep troughs, and at the next rising with the utmost alertness to their highest points, apparently from an impulse communicated as much by striking the surface of the water with its webbed feet as by the action of the wings. Like the other members of the genus, it feeds on mollusca, the spawn of fish, and any kind of fatty matter that may be floating on the surface of the ocean.

I have not been able to trace the breeding-place of this or of the preceding species; information on this part of their economy is therefore desirable.

The sexes are so much alike that I could never distinguish them by their outward appearance.

Head and neck deep sooty black; back greyish black, each feather margined with white; wings and tail black; chest, all the under surface, and the upper tail-coverts white; bill and feet jet-black.

Some slight variation appears to exist in the extent of the sooty colouring of the neck; in some specimens it merely descends to the base of the throat, while in others it spreads over the chest, but never down the centre of the abdomen.

Total length $7\frac{1}{4}$ inches; bill $\frac{3}{4}$; wing 6; tail 3; tarsi $1\frac{1}{2}$; middle toe and nail 1.

Genus PELAGODROMA, *Reichenbach*.

Of this singularly marked Petrel one species only is known.

Sp. 649. PELAGODROMA FREGATA.

WHITE-FACED STORM-PETREL.

Procellaria fregata, Linn. Syst. Nat., tom. i. p. 212.

—— *æquorea*, Soland. M.S. Banks's Draw., no. 13.

—— *hypoleuca*, Webb et Berth.

Pelagodroma marina, Reich. Syst. Av. tab. 16. fig. 784, et tab. 18. figs. 2447, 2448 at 2449.

—— *fregata*, Bonap. Consp. Gen. Av., tom. ii. p. 198.

Procellaria marina, Lath. Ind. Orn., vol. ii. p. 826.

Frigate Petrel, Lath. Gen. Syn., vol. vi. p. 410.

Thalassidroma marina, Less. Traité d'Orn., p. 612.

***Thalassidroma marina*, Gould, Birds of Australia, fol., vol. vii. pl. 61.**

That this fine species enjoys a wide range over the southern ocean is certain, the specimen figured by Vieillot in his 'Galérie des Oiseaux' having been procured at New Zealand, while numerous individuals in my own collection were procured in Australia. Gilbert discovered it breeding on some of the small islands lying off Cape Leuwin in December, where he procured numbers of its eggs, as well as many examples of the adult birds; he also met with it on a small island about three miles south of East Wallaby Island in January, by which time the young birds were almost ready to leave their holes. The specimens procured on this island are peculiarly interesting, as showing how completely the true feathers are assumed before the downy covering is thrown off.

The egg of this species is pure white, one inch and a half long by one inch and an eighth broad: whether one or two are laid at a time is uncertain, but I believe only one.

Forehead, face, line over the eye, and all the under surface pure white; crown and nape, a broad patch beneath the eye,

and the ear-coverts slate-colour; sides of the chest, back of the neck, and upper part of the back dark grey, gradually passing into the dark brown of the back and wings; upper tail-coverts light grey; primaries and tail black; irides dark reddish brown; legs and feet black; webs yellow.

The plumage of the immature birds being carefully represented in the drawing, a minute description is unnecessary.

Genus HALADROMA, *Illiger*.

Of this singular southern form two species are known only, one of which, I believe, pertains to the avifauna of Australia.

Sp. 650. HALADROMA URINATRIX.

DIVING PETREL.

Procellaria urinatrix, Lath. Ind. Orn., vol. ii. p. 827.

Haladroma urinatrix, Ill. Prod. Syst. Mamm. et Av., p. 274.

Diving Petrel, Lath. Gen. Syn., vol. vi. p. 413.

Procellaria tridactyla, Forst. Drawings, No. 88.

Halodroma urinatrix, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 257.

Puffinuria garnotii, Less. Zool. de la Voy. de la Coq., pl. 46.

Pelecanoïdes urinatrix, Cuv.

Tee-tee, Aborigines of New Zealand.

Puffinuria urinatrix, Gould, Birds of Australia, fol., vol. vii. pl. 60.

I observed that this curious little bird was very abundant in Storm Bay, in Tasmania; I have also seen specimens from New Zealand. As might be supposed from its structure, the habits and economy of this Diving Petrel are totally different from those of all the other members of the family. It possesses none of those vast powers of flight common to the rest of the Petrels, but has this loss amply compensated for by its powers of diving, which are so great that it is even said to fly under water. Its flight is a curious fluttering motion, performed so close to the surface that it rarely rises high enough to top the

waves, but upon being met by them makes progress by a direct course through instead of over them. Latham states that it inhabits "Queen Charlotte's Sound, and other parts adjacent to New Zealand in vast flocks; fluttering upon the surface of the water or sitting upon it, and dive well; arising often at a considerable distance, with amazing agility. They croak like frogs, sometimes make a noise like the cackling of a hen, and are known by the name of Tee-tee."

In external appearance the Diving Petrel so much resembles the Little Auk of the northern seas, that at the first glance it might be readily mistaken for that species; their resemblance, however, is merely that of analogy, for they are representatives of each other in the respective families to which they belong. I observed this or a nearly allied species about 20 degrees to the eastward of New Zealand, taking some of the lower animals from the surface of the ocean, now and then dashing under water, rising again, skimming close to the surface and then flying off in a straight line with a quick fluttering motion of the wings.

Examples of this bird differ considerably in colour, some having the under surface washed with dark grey, while in others, and by far the greater number, that part of the plumage is white.

Head, all the upper surface, wings, and tail shining black; ear-coverts, sides of the neck, and flanks dark grey; all the under surface white; irides very dark greyish brown; base of the cutting edge of the upper mandible and a line along the lower edge of the under mandible blue grey; tarsi and toes beautiful light blue; webs transparent bluish white, tinged with brown; naked pouch hanging from the chin nearly black, and being very thin lies in folds like a bat's wing.

Family PELECANIDÆ.

The members of this extensive family are the most truly ichthyophagous birds in existence ; and it is particularly interesting to observe how varied are their forms, and how admirably each is adapted for some particular end and purpose ; it is the investigation of these especial adaptations which gives a zest to the study of nature generally, but more so perhaps to ornithology than to other branches of natural science. Such adaptations exist in all great groups of birds, but in none are they more remarkable than in the *Pelecanidæ*.

In the first rank of this family are the Gigantic Pelicans with their heavy bodies, large boat-like bills, extensive gullets, and widely webbed feet ; next in size, but different in structure, are the Cormorants with their hooked bills, dense adpressed plumage adapted for immersion, and their feet well formed for perching on rocks and the branches of trees ; to these succeed the Darters with their long snake-like necks and narrow pointed bills ; then the Frigate-birds with their greatly developed wings and diminutive feet, a form especially adapted for aërial progression, whether for soaring Eagle-like in the air, for performing extensive flights from one part of the ocean to another, or for seeking the shore from immense distances when desirous of roosting. Of all birds they are the most powerful fliers. To these succeed the Gannets, lovers of the salt sea, into which they plunge their heavy bodies with a force that is truly astonishing ; last of all come the fairy-like Tropic-birds, who, while sailing over the ocean, perform many pleasing evolutions, and exhibit their lengthened tail-plumes to the utmost advantage.

All these forms occur in various parts of the globe, and most of them fly over the seas surrounding Australia, and live on the rocky promontories or on the rivers and inland waters of that extensive country

Genus PELECANUS, *Linnaeus*.

Six species of this remarkable genus of birds inhabit the Old World, and three America. None of them brave the cold blasts of the north or dwell in the high antarctic regions of the south, but frequent the warmer or more temperate latitudes. Their food consists solely of fish, for procuring which they combine in small companies and drive their finny prey into shallow bays and inlets of the sea. They frequently ascend rivers far into the interior of the respective countries they inhabit, and even visit inland lakes and great pools of water in the centre of such countries as Africa and Palestine; and hence one of the species, either *P. onocrotatus* or *P. crispus*, is spoken of in Sacred Writ as the "Pelican of the Wilderness."

Australia, like other warm countries, has a Pelican, which is specifically distinct from all the others.

Sp. 651. PELECANUS CONSPICILLATUS, *Temm.*

AUSTRALIAN PELICAN.

New Holland Pelican, Lath. Gen. Hist., vol. x. p. 402.

Pelecanus conspicillatus, Temm. Pl. Col., 276.

— *australis*, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. part i. p. 113.

Ne-rim-ba, Aborigines in the neighbourhood of Perth.

Beo-dee-lung, Aborigines near the Murray.

Pelecanus conspicillatus, Gould, *Birds of Australia*, fol., vol. vii. pl. 74.

Of the members of the genus *Pelecanus* the present may be regarded as one of the very finest species; in size it fully equals its European prototypes the *P. onocrotalus* and *P. crispus*, and although devoid of crest-plumes, this ornament is fully compensated by the varied markings of the face and mandibles. It is abundant in all the rivers and inlets of the

sea, both in Tasmania and on the continent of Australia. I shot specimens on Green Island in D'Entrecasteaux' Channel, and I also met with it in abundance in South Port River: owing to the advance of colonization it had become scarce in the Derwent and Tamar when I visited Tasmania, but it may still breed on the small group called Stanners' Bay Islands, lying off the south-western end of Flinder's Island in Bass's Straits. In Australia it is common on the Hunter as well as in Spencer's and St. Vincent's Gulfs, and on all the waters of the interior, such as the Mokai, Namoi, &c., and on all lakes of sufficient magnitude to afford it a supply of food. So numerous is it on these inland waters, that Captain Sturt states that the channel of a river from seventy to eighty yards broad was literally covered with Pelicans; and that they were in such numbers upon the Darling as to be quite dazzling to the eye.

The nest is a large structure of sticks and grassy herbage, placed just above high-water mark; the eggs are generally two in number, of a dirty yellowish white, three inches and three-quarters long by two inches and three-eighths broad.

The entire plumage white, with the exception of the scapularies, a line along the edge of the shoulder, the lower row of the greater wing-coverts, the primaries, secondaries, a few of the upper tail-coverts, and the tail, which are black; on the breast a pale wash of sulphur-yellow; gular pouch and mandibles yellowish white, the latter stained with blue, which gradually increases in depth to the tip; apical half of the cutting edges of the mandibles yellow, gradually increasing in depth to the tip; nail of both mandibles greenish yellow; irides dark brown; eyelash indigo-blue; orbits pale sulphur-yellow, bounded by a narrow ring of pale indigo-blue; legs and upper part of the tarsi yellowish white; feet, webs, and lower part of the tarsi pale bluish grey, the two colours blending with each other at the middle of the tarsi; nails dull yellowish white.

Genus PHALACROCORAX, *Brisson*.

The Cormorants, whose range is universal, are well represented in Australia, since five species inhabit and are peculiar to that country. In New Zealand the birds are nearly as numerous, and among them are some not found in Australia.

These birds have been divided into several genera by Bonaparte and others; the term *Phalacrocorax* being retained for the largest and most powerful of them; *Hypoleucus* for those distinguished by the dark colouring of their upper and the whiteness of their under surface; *Helieus* for the species distinguished by the small size of their bills and the great development of the feathers of the head during the breeding-season, which differ from the true Cormorants in their habits, particularly in affecting inland waters and in constructing their nests on the branches of trees, and of which one species inhabits Australia, and another, it is said, New Zealand; and lastly *Microcarbo* for the small black Cormorant of Australia, a form of which it is the only one known there.

Sp. 652. PHALACROCORAX NOVÆ-HOLLANDIÆ,
Stephens.

AUSTRALIAN CORMORANT.

New Holland Shag, Lat. Gen. Hist., vol. x. p. 431.

Phalacrocorax novæ-hollandiæ, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. pt. i. p. 93.

—— *carboïdes*, Gould in Proc. of Zool. Soc., part v. p. 156.

Graculus carboïdes, G. R. Gray, Zool. of Voy. of Erebus and Terra del Drago, p. 20.

Black Shag, Colonists of Western Australia.

Phalacrocorax carboïdes, Gould, Birds of Australia, fol., vol. vii. pl. 66.

This is the largest species of Cormorant yet discovered in Australia, and even exceeds in size its prototype the *Phalacro-*

corax carbo of Europe. Although enjoying a wide range over the southern part of the country, it is nowhere so abundant as in Tasmania. In this island it not only inhabits all the bays and inlets of the sea, but it also ascends the large rivers even to the lakes in the middle of the island, on several of which it breeds. In Western Australia it is tolerably abundant at King George's Sound; it also ascends the Swan, and is sometimes observed far up the Murray. In South Australia and New South Wales it frequents similar localities, and I killed several while perched on the high gum-trees on various parts of the Hunter. It is, however, so shy and wary that it is very difficult to get within shot of it: when flying it frequently mounts in circles until nearly out of sight.

Its habits, manners and mode of life are so precisely similar to those of the Common Cormorant of Europe that a description of them would be superfluous. Its chief food as a matter of course consists of fish.

It lays two bluish white eggs, about two inches and a half long by one inch and three-quarters broad, on a nest composed of sea-weed and other marine vegetables placed on the ledge of a rock.

This fine bird weighs from six to seven pounds.

In summer the adult male has the throat and sides of the face buffy white; crown of the head, lengthened plumes at the occiput, neck, all the under surface, rump and tail deep glossy blackish green; feathers of the back, wings, and upper part of the flanks chocolate, broadly margined with deep glossy blackish green; neck ornamented with numerous fine white feathers; a patch of white feathers is also situated on the outer side of each thigh; irides green; bare skin round the eye and under the throat rich yellow; feet jet black; culmen and tips of both mandibles horn-colour; remainder of the bill fleshy white.

Total length 34 inches; bill 4; wing $13\frac{1}{2}$; tail 8; tarsi $2\frac{1}{4}$.

In winter the plumage is precisely similar, with this excep-

tion, that the white feathers on the neck have entirely disappeared, leaving that part of the same hue as the under surface.

The nestlings are sparingly covered with black down; when they are fledged the upper surface is paler than in the adult, and the under surface nearly white. In this state of plumage they resemble the young of the Common Shag or Cormorant of the European seas.

Sp. 653. PHALACROCORAX VARIUS.

PIED CORMORANT.

Pelecanus pica, Forster's Drawings, no. 106.

—— *varius*, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 575.

—— *fuscescens*, Vieill. 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. viii. p. 86.

Pied Shag, Lat. Gen. Syn., vol. vi. p. 605.

Carbo albiventer, Less.

Graculus varius, G. R. Gray, Zool. of Voy. of Ereb. and Terr., Birds, p. 19.

Hypoleucus varius, Reich. Syst. Av., tab. 63. fig. 874.

Ma-dee, Aborigines of the lowland districts of Western Australia.

Black and White Shag, Colonists of Western Australia.

Phalacrocorax hypoleucus, Gould, Birds of Australia, fol., vol. vii. pl. 68.

I first observed this fine Cormorant in Nepean Bay, Kangaroo Island, where it was very abundant, and I have since ascertained that no species of the genus inhabiting Australia possesses a wider range, for it is almost universally dispersed along the whole line of the southern coast from Swan River on the west to Moreton Bay on the east; I have also received specimens from New Zealand, which present no perceptible differences.

The Pied Cormorant may be regarded as a gregarious species, many hundreds being sometimes seen in company, particularly in those bays and inlets of the sea whose shores are flat and sandy, and where the tide brings in an abundant supply of fish, upon which the bird almost solely subsists, and

in the capture of which it exhibits the same dexterity as the other members of the genus. Its large size and the contrast of its pied plumage render it a most conspicuous bird when seen on the surface of the water, but at no time does it form so prominent an object in the scene as when observed reposing on the sand-banks and low ledges of rock, after having satiated itself with food.

The eggs of this species, taken on Three Sisters' Island, about twenty miles southward of Swan River, were two inches and a half long and of a pale bluish white; I obtained no other particulars respecting its nidification, but Latham states in his 'General History' that it builds in trees, on which "a dozen or more are seen at once, being more numerous than the Spotted Shag" (*Phalacrocorax punctatus*). "The egg is two inches and a half long, rather smaller than that of a hen, and of a pale bluish white."

I know of no other instance of Cormorants building on trees except the present and that of the *Phalacrocorax melanoleucus*, and this habit of the *Phalacrocorax varius* is given on Latham's authority.

The sexes are precisely alike in plumage, and also in the brilliant markings of the lores and orbits; the young of the first autumn differ in having all the upper surface brown, each feather having lighter edges; the sides of the neck and upper part of the breast are also mottled with brown and white.

Crown of the head, back of the neck, lower part of the back, upper tail-coverts, flanks and thighs deep glossy steel-blue; all the upper surface and wings deep dull green, each feather with a very narrow margin of velvety black; primaries and tail deep greenish black; sides of the face and all the under surface pure white; irides pale sea-green; bare space in front of the eye bright orange; eyelash and naked skin beneath the eye rich indigo-blue; throat and cheeks light bluish ash; bill dark horn-colour, becoming lighter at the tip; legs and feet black.

Sp. 654. PHALACROCORAX LEUCOGASTER, *Gould*.

WHITE-BREASTED CORMORANT.

Phalacrocorax leucogaster, Gould in Proc. of Zool. Soc., part v. p. 156.

Carbo hypoleucus, Brandt.

Graculus leucogaster, G. R. Gray, Zool. of Voy. of Ereb. and Terr., Birds, p. 20.

Hypoleucus leucogaster, Reich. Syst. Av., tab. 63. fig. 875.

Phalacrocorax leucogaster, Gould, Birds of Australia, fol., vol. vii pl. 69.

This species is very abundant in all the bays and inlets of the sea surrounding Tasmania; it ascends the rivers almost to their source, and the large lakes of the interior are seldom without its presence. It breeds on most of the islands in Bass's Straits, where it constructs a round nest of sea-weed on the ledges of the low rocks, and lays two bluish-white eggs. It becomes far less numerous as we proceed northward, but is to be found in all the localities suitable to it throughout the whole of the coast of South Australia. I have also seen it on the Hunter as well as in Spencer's and St. Vincent's Gulfs.

In a state of nature it is a showy and attractive bird, the decided contrast in the colouring of its plumage rendering it a conspicuous object at a considerable distance, particularly when it is reposing in flocks on the craggy summits of the low black rocks forming the margins of the rivers, or when perched side by side on the bare branches of the trees overhanging the water.

Its food consists of fish and other marine animals.

The sexes are so nearly alike in their plumage that it is impossible to distinguish them without the aid of dissection; the spring or nuptial dress is characterized by long white feathers springing from the sides of the neck, which are entirely absent at other seasons. The young of the year has the

plumage of the upper surface tinged with brown, and the white of the neck clouded and mottled with the same colour.

Forehead, crown of the head, back of the neck, and rump greenish black; back and wing-coverts deep green, each feather narrowly margined with black; primaries and secondaries black; throat, front and sides of the neck, and all the under surface white; bill and feet black; naked skin at the base of the bill and round the eye purple; irides green.

Total length 26 inches; bill 3; wing $11\frac{1}{2}$; tail $5\frac{3}{4}$; tarsi $2\frac{1}{4}$.

Sp. 655. PHALACROCORAX MELANOLEUCUS.

LITTLE CORMORANT.

Pelecanus melanoleucus, Vieill. 2nd Edit. du Nouv. Dict. d'Hist. Nat., tom. viii. p. 88.

—— *dimidiatus*, Cuv.

Phalacrocorax flavirhynchus, Gould in Proc. of Zool. Soc., part v. p. 157.

Graculus melanoleucus, G. R. Gray, Zool. of Voy. of Ereb. and Terr., Birds, sp. 20.

Carbo dimidiatus, Temm.

Hypoleucus melanoleucus, Reich. Syst. Av., tab. 63. figs. 872, 873.

Haliæus melanoleucus, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli. 1856.

Gô-go-go, Aborigines of the lowland districts of Western Australia.

Little Shag, Colonists of Swan River.

Phalacrocorax melanoleucus, Gould, *Birds of Australia*, fol., vol. vii. pl. 70.

This Cormorant is dispersed over every part of Australia, wherever a locality suitable for its existence occurs, but is nowhere very abundant. It evinces a greater preference for deep armlets of the sea, inland rivers and lagoons, than for the rocky shores of the coast. Both in Tasmania and New South Wales and also in South Australia, I observed it far inland, wherever there was sufficient water to afford it a supply of food, a solitary individual, or at most a single pair, being all that was to be seen in any one district; here it may be seen perched

erect on its favourite snag of some fallen tree resting on the bed of the river, or on the leafless branch of a *Eucalyptus* bordering the stream. The shyness of its disposition renders it very difficult of approach, particularly if its natural timidity has been increased by the discharge of a gun in the immediate neighbourhood of its haunts. Its food generally consists of fish, but I once observed several individuals, on a lagoon formed by the abundance of rain that had fallen a few days before, busily employed in feeding upon the insects and their larvæ, which the united agency of the warmth and moisture had brought into life ; from the muddy state of the water, they had so soiled their silvery neck and breast as to be scarcely recognizable.

At Port Essington this species is said to construct its nest and rear its young in the tea-trees (*Melaleucæ*) bordering the rivers near the coast, seven or eight pairs associating for the purpose in a single tree ; at this time they are exceedingly pugnacious. The eggs are stated to be six in number, but this requires confirmation.

The sexes are precisely alike in colouring, and I suspect that the young assume the white plumage of the under surface from the period of their leaving the nest, as I have never met with a specimen in which that part was of any other colour.

Crown of the head, a broad line down the back of the neck, back, rump, and flanks deep shining steel-bluish black ; wing-coverts and scapularies greyish black, each feather margined with deep black ; primaries and tail black ; sides of the face, throat, and all the under surface pure white ; irides greyish white ; bill yellow, except the culmen, which is dark horn-colour ; orbits dull reddish brown ; throat yellow ; legs and feet black.

Sp. 656. PHALACROCORAX STICTOCEPHALUS,
Bonaparte.

LITTLE BLACK CORMORANT.

Phalacrocorax sulcirostris, G. R. Gray, List of Birds in Brit. Mus. Col., part iii. p. 135.

Microcarbo stictocephalus, Bonap. Consp. Gen. Av., tom. ii. p. 178.

Phalacrocorax sulcirostris, Gould, Birds of Australia, fol., vol. vii. pl. 67.

The *Microcarbo stictocephalus* is found in most of the southern parts of the Australian continent, and appears to affect the rivers and lagoons of the interior rather than the sea-coast; at least such was the result of my own observations; I found it nowhere more abundant than on the rivers Mokai, Peel, and Namoi. Its habits did not appear to differ from those of the other members of the family; it was usually seen perched on the branches of the *Eucalypti* overhanging the water, and on the spars and snags of the fallen trees which protruded above its surface in small companies of from five to twenty in number.

Its food consists of fish, frogs, newts, &c.

There is no visible difference in the colour of the sexes.

The general plumage dark glossy greenish black; the feathers of the back and wings grey, margined with greenish black; over the eye and dispersed over the sides of the neck numerous minute narrow white feathers, which are probably only assumed during the breeding-season; irides deep grass-green; orbits and gular pouch brownish black, the pouch strongly tinged with blue; feet black.

Genus PLOTUS, *Linnaeus*.

Asia, Africa, America, and Australia are each tenanted by a species of this genus, the members of which are but few in number, and the specific differences of these are not well understood.

Sp. 657. PLOTUS NOVÆ-HOLLANDIÆ, *Gould*.

NEW HOLLAND DARTER.

Plotus novæ-hollandiæ, Gould in Proc. of Zool. Soc., part xv. p. 34.

Plotus novæ-hollandiæ, Gould, *Birds of Australia*, fol., vol. vii. pl. 75.

The habitat of this singular bird appears to be confined to the colonies of South Australia and New South Wales, where it is thinly but generally dispersed in all situations favourable to its habits; such as the upper parts of arm-lets of the sea, the rivers of the interior, extensive water-holes, and deep lagoons. Shy and seclusive in disposition, it usually takes up its abode in localities little frequented by man; seeks its prey in the water, dives with the greatest ease to the bottom of the deepest pools, and is as active in this element as can well be imagined. It ordinarily swims with a considerable portion of the body above the surface of the water, but upon being disturbed immediately sinks beneath it, leaving the head and neck only to be seen, and these, from their form and the motion communicated to them by the action of swimming, present a close resemblance to those of a snake. Its food consists of fish, aquatic insects, newts, frogs, &c. After feeding it perches on a snag of some fallen tree in the water, or on the naked branch of a tree in the forest nigh to its haunts, often on one of the greatest height, where it sits motionless for hours together: while thus perched it is much more easily approached and shot than on the water, where it is wary in the extreme.

The late Mr. Elsey, speaking of the birds observed by him near the Victoria, says, "The *Plotus* is common here, and excellent eating. During February and March it was incubating. It chooses large trees that hang over the water above or through the mangroves, and in these a number of them build a colony of large, coarse, flattish nests of dead sticks and twigs, which seem, from the quantity of dirt about them and their stained appearance, to be used year after year. Each season they place in the centre a few fresh green leaves, and on these lay three or four white eggs with a very earthy opaque but brittle shell; the lining membrane is of a blue-grey colour; they are rather smaller than a hen's egg. We have enjoyed many fine meals off these eggs, sometimes getting from forty to fifty in a single tree. Both birds sit."

Much variation exists in the colouring of the sexes; the female being, I believe, at all times distinguished by her buffy white breast and neck, which parts in the male are black. Young birds for the first and probably for the second year are the same colour as the female.

The male has an arrow-head-shaped mark of white on the throat; a broad stripe of the same colour commences at the base of the mandibles, extends for about four inches down the sides of the neck, and terminates in a point; head, neck, and all the upper surface of the body greenish black, stained with brown, and with deep rusty red on the centre of the under side of the throat; under surface deep glossy greenish black; wings and tail shining black; all the coverts with a broad stripe of dull white occupying nearly the whole of the outer and a part of the inner web, and terminating in a point; scapularies lanceolate in form, with a similar-shaped mark of white down the centre, and with black shafts, the scapular nearest the body being nearly as large as the secondaries, and with the outer web crimped and the inner web with a broad stripe of dull white close to the stem; the secondaries nearest the body with a similar white stripe close to the stem on the

outer web ; centre tail-feathers strongly, and the lateral ones slightly crimped ; orbits naked, fleshy, protuberant, and of a yellowish olive, mottled over with brown specks ; next to the pupil of the eye is a narrow ring of dull orange-buff ; to this succeeds another ring of marbled buff and brown, and to this an outer circle of orange-buff ; naked skin at the base of the lower mandible wrinkled and yellow ; upper mandible olive, under mandible dull yellow, both becoming brighter towards the base ; feet yellowish flesh-colour, becoming brown on the upper part of the outer toes.

Total length 36 inches ; bill 4 ; wing $13\frac{1}{2}$; tail 9 ; tarsi 2.

The female has the crown of the head, back of the neck, and upper part of the back blackish brown, each feather margined with greyish white ; throat and all the under surface buffy white ; the remainder of the plumage like the male, but with the white marks on the wing-coverts larger and more conspicuous ; irides ornamented with a beautiful lace-work of brown, the interstices being buff ; orbits, naked skin at the base of the bill, and throat orange-yellow ; feet pale yellow.

Genus TACHYPETES, Vieillot.

Two species of this aerial form inhabit Australia, both of which are common in Torres' Straits at one or other season of the year.

No birds differ more than the members of this genus, for some examples have white and others brown heads, and moreover exhibit many other conflicting differences, both in colour and size.

Until the question is settled as to whether there be more than two species of this genus, which at present I have no means of determining, I shall refer both the Australian birds to the old *T. aquila* and *T. minor*.

Sp. 658. TACHYPETES AQUILA.

GREAT FRIGATE-BIRD.

Pelecanus aquilus, Linn. Syst. Nat., tom. i. p. 216.

—— *leucocephalus*, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 572.

—— *palmerstoni*, Gmel. Ib., p. 573.

Attagen aquila, Gould, Birds of Australia, fol., vol. i. Introd. p. c.

Tachypetes aquila, Vieill. Gal. des Ois., tom. ii. p. 187, pl. 274.

I have received numerous skins of a Frigate-bird from Torres' Straits which are much larger than the succeeding species, and which may be referable to the *Pelecanus aquilus* of Linnæus; but this requires confirmation. If it really be so, then the bird frequents all the seas of the warmer parts of the globe, and retires to rocky islands to breed, such as those in Torres' Straits, Ascension in the South Atlantic, those in the Gulf of Mexico and Florida.

Sp. 659. TACHYPETES MINOR.

SMALL FRIGATE-BIRD.

Pelecanus minor, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 572.

Fregata minor, Briss. Orn., tom. vi. p. 509.

Tachypetes ariel, G. R. Gray.

—— *minor*, Bonap. Consp. Gen. Av., tom. ii. p. 167, *Tachypetes*, sp. 2.

Man-of-War Bird, Edw. Glean. of Nat. Hist., pl. 309.

Lesser Frigate, Lath. Gen. Syn., vol. iii. p. 590.

Atagen ariel, Gould, MS.—Gray, Genera of Birds, vol. iii. p. 669,

Atagen, sp. 2.

Attagen ariel, Gould, Birds of Australia, fol., vol. vii. pl. 72.

This species of *Tachypetes*, which is considered to be the old *Pelecanus minor* of Gmelin, is rather abundantly dispersed over the seas washing the shores of the tropical parts of the Australian continent, particularly those of Torres' Straits.

The late Commander Ince, R.N., who, during the surveying voyage of H.M.S. Fly, was for some time stationed on Raine's Islet, superintending the erection of a beacon, informed me that on his landing on this small island, which is situate in lat. 12° S., at about seventy miles from the north-eastern coast of the Australian continent, and surrounded by a part of the great barrier reef, he "found this bird breeding in colonies at its S.W. corner, the nest being composed of a few small sticks collected from the shrubs and herbaceous plants which alone clothe the island, and placed either on the ground or on the plants, a few inches above it. The eggs, which are generally one, but occasionally two in number, are of a pure white, not so chalky in appearance as those of the Gannet, and nearly of the same shape at both ends. Upon one occasion I killed the old birds from a nest that contained a young one; on visiting the spot I found the young bird removed to another nest, the proprietors of which were feeding it as if it had been their own: I am sure of this fact, because there was no other nest near it containing two young birds. Some of the eggs were quite fresh, while others had been so far sat upon that we could not blow them; and many of the young birds must have been hatched some two or three weeks. We regarded these birds as the Falcons of the sea, for we repeatedly saw them compel the Terns, Boobies, and Gannets to disgorge their prey, and then adroitly catch it before it fell to the ground or water. We never saw them settle on the water, but constantly soaring round and round, apparently on the watch for what the smaller birds were bringing home. I have found in their pouch young turtles, fish, cuttle-fish, and small crabs."

The male has the entire plumage brownish black, the feathers of the head glossed with green, and the lengthened plumes of the back with purple and green reflexions; orbits and gular pouch deep red; bill bluish horn-colour; irides black; feet dark reddish brown.

The female is similar to the male, but browner ; is destitute of the coloured plumes on the back ; has some of the wing-coverts and tertiaries edged with light brown, forming a mark along the wing ; a collar at the back of the neck ; the breast and upper part of the flanks white, washed with rufous.

A nestling bird in my collection is clothed in white down, except on the back and scapularies, where the dark brown coloured and perfect feathers have just been assumed.

Genus PHAËTON, *Linnæus*.

Of the little group known as Tropic-birds, Bonaparte enumerates three species, which he has placed in as many genera, namely, *Phaëton*, *Lepturus*; and *Phœnicurus*. Of these, the last is the only one comprised in the avifauna of Australia. I shall not, however, adopt this name.

Sp. 660. PHAËTON PHŒNICURUS, *Gmelin*.

RED-TAILED TROPIC-BIRD.

Phaëton phœnicurus, Gmel. Edit. of Linn. Syst. Nat., vol. i. p. 583.

—— *rubricauda*, Bodd.

—— *erubescens*, Banks's Drawings, No. 31.

Paille-en-queue à brins rouges, Buff. Hist. des Ois., tom. viii. p. 357.

—— *de l'Isle de France*, Buff. Pl. Enl., 979.

Red-tailed Tropic-bird, Lath. Gen. Syn., vol. vi. p. 619, pl. 105.

New Holland Tropic-bird, Lath. Gen. Hist., vol. x. p. 448.

Phaeton phœnicurus, Gould, Birds of Australia, fol., vol. vii. pl. 73.

This bird is very generally dispersed over the temperate and warmer latitudes of the Indian Ocean and the South Seas, where it often hovers round ships, and occasionally alights on their rigging. During the months of August and September it retires to various islands for the purpose of breeding ; among other places selected for the performance of this duty are Norfolk Island off the east coast of Australia,

and Raine's Islets in Torres' Straits, from both of which localities I possess specimens of the bird and its eggs. As I had no opportunity of observing it, I avail myself of the following information communicated to me by Mr. Macgillivray :—

“This Tropic-bird was found by us on Raine's Islet, where, during the month of June, about a dozen were procured. Upon one occasion three were observed performing sweeping flights over and about the island, and soon afterwards one of them alighted; keeping my eye upon the spot, I ran up and found a male bird in a hole under the low shelving margin of the island bordering the beach, and succeeded in capturing it after a short scuffle, during which it snapped at me with its beak, and uttered a loud, harsh, and oft-repeated croak. It makes no nest, but deposits its two eggs on the bare floor of the hole, and both sexes assist in the task of incubation. It usually returns from sea about noon, soaring high in the air, and wheeling round in circles before alighting. The eggs are blotched and speckled with brownish red on a pale reddish grey ground, and are two inches and three-eighths long by one inch four eighths and a half broad.

“The contents of the stomach consisted of the beaks of cuttle-fish.

“The only outward sexual difference that I could detect consists in the more decided roseate blush upon the plumage of the male, especially on the back; but this varies slightly in intensity in different individuals of the same sex, and fades considerably in a preserved skin.”

Latham states that it is found in great numbers on the island of Mauritius, that it is very common at Palmerston, Turtle, and Harvey's Islands in the South Seas, and that in all these places its eggs are deposited on the ground under the trees.

The adults have a broad crescent of black before each eye, the upper part of which extends over and behind that organ;

centre of the tertiaries and flank-feathers deep black; the whole of the remainder of the plumage silky white, with a rich roseate tinge, especially on the back; shafts of the primaries black from the base to within an inch of their apex; shafts of the lateral tail-feathers black to within half an inch of the tip; two centre tail-feathers white at the base and rich deep red for the remainder of their length, which extends to eighteen inches, their shafts black; irides black; bill vermilion, with a black streak running through the nostrils, and a narrow line of faint blue at the base of both mandibles; tarsi and the base of the toes and webs faint blue, remainder of the toes and webs black.

The young birds for the first year are very different from the adults, being of a silky white without the roseate blush, with the whole of the upper surface broadly barred with black and with the black of the shafts of the primaries expanded into a spatulate form at the tips of the feathers.

Genus SULA, *Brisson*.

The birds hitherto included in this genus have recently been divided into no less than three genera, *Sula*, *Dysporus*, and *Piscatrix*. They inhabit nearly every part of the globe, and four fine species appertain to the Australian fauna, since they not only frequent the seas adjacent to the shores of that country, but all of them resort to its rocks and islands for the purpose of breeding.

Our own well-known Bass Rock is inhabited yearly by a bird of this genus bearing the trivial name of Solan Goose, which must be familiar to every reader of the present Handbook, at least to all those who reside in the British Islands. These birds are also well known by the name of Boobies, an appellation they have obtained from their apparently stupid insensibility to danger.

Sp. 661. SULA AUSTRALIS, *Gould*.

AUSTRALIAN GANNET.

Sula australis, Gould in Proc. of Zool. Soc., part viii. p. 177.

Pelecanus serrator, Banks, Drawings, no. 30.

Sula serrator, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Sula australis, Gould, Birds of Australia, fol., vol. vii. pl. 76.

It will be clear to every ornithologist that the present species and the *Sula bassana* of Europe are representatives of each other, and that they are destined by nature to perform similar offices, and to inhabit corresponding zones of latitude in opposite hemispheres. Their habits, actions, and economy are, in fact, so precisely alike, that an account of one species is equally applicable to the other.

I found the *Sula australis* generally dispersed over the seas washing the shores of Tasmania, but most numerous on the south side of the island. The Mewstone, the South Cape, the rock at the mouth of D'Entrecasteaux's Channel, and the low Actæon Islands were tenanted by hundreds during the period of my visit in 1839, and it was also seen, but in less numbers, along the entire coast of South Australia. Much as has been said respecting the natural stupidity of other species of the genus *Sula*—Boobies as they are called,—the present appeared to be the Booby "*par excellence*," as evidenced by the manner in which I captured the specimens in my collection. Observing about fifty fine adult birds reposing on the flat top of a low rock on one of the Actæons, I directed my boatmen to row cautiously that I might endeavour to get a shot at them; I was soon not only within range, but too near to use my large duck gun, loaded as it was with large shot; I determined therefore to shoot them on the wing as they flew from their resting-place; judge of my surprise when I found that neither the near approach of the boat nor our speaking to each other startled them in the least. Taking one

of the men with me, I stepped on shore and approached the motley assembly, which was still sitting in close array on the rock, and which did at length exhibit some degree of surprise and uneasiness at the intrusion, but even then was so little disturbed that we succeeded in capturing five fine birds with the hand before the remainder had shuffled off to the ledge of the rock and taken wing. Had this occurred at a breeding-place it would not have excited my astonishment, for I was aware that the *Sula bassana* would allow itself to be so taken at that period ; but I did not expect that the present species would admit of being captured while merely at rest: this apparent want of caution or stupidity may in all probability be attributed to the fact that their haunts on these islands had rarely been intruded upon: boats the natives of the southern parts of Tasmania never possessed, and the visits of civilized man must have been few and far between.

The food of this species consists of fish of various kinds, which it procures by plunging vertically upon them as they swim near the surface of the water.

The sexes when adult are precisely alike in plumage; the young on the contrary, as is the case with the European bird, differ greatly from their parents; at first they are entirely dark grey, which gives place to a beautifully mottled appearance, the head, neck, and under surface having put on a white colouring with blotches or traces of the dark grey still remaining, and the feathers of the upper surface having a triangular spot of white at the tip of each; this style of plumage is gradually exchanged for the following, which is characteristic of the adult.

Crown of the head and back of the neck beautiful buff; the remainder of the plumage white, with the exception of the primaries, secondaries, and four centre tail-feathers, which are fuliginous brown with white shafts; irides olive-white; bill brownish horn-colour, slightly tinged with blue; space round the eye leaden blue; bare skin at the base of the beak and

down the centre of the throat nearly black ; front of the tarsi and toes sickly greenish yellow ; webs brown.

Total length 32 inches ; bill $5\frac{1}{4}$; wing 19 ; tail 10 ; tarsi 2.

Sp. 662. SULA CYANOPS, *Sundevall*.

MASKED GANNET.

Sula personata, Gould in Proc. of Zool. Soc., part xiv. p. 21.

—— *cyanops*, Sundevall, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Sula personata, Gould, Birds of Australia, fol., vol. vii. pl. 77.

In the course of the present work I have had frequent occasion to mention in terms of praise the great assistance rendered to myself and to the cause of Ornithological science by the officers of H.M.S. Beagle, under the command of Rear-Admiral Stokes ; and I have now the pleasure of placing on record the services also rendered to me by the officers of H.M.S. Fly, under the command of Captain Blackwood, to whose investigations, while engaged in surveying 'Torres' Straits, we are indebted for our knowledge of the fine Gannet here represented, as well as for several other interesting species.

The Masked Gannet was found breeding in considerable numbers on Raine's Island ; the egg, which is rather lengthened in form, is two inches and five-eighths long by one inch and three-quarters broad, and of a dirty white, stained or clouded all over with reddish brown.

I did not succeed in procuring examples of this bird during my own researches in Australia, but it once came under my observation during my voyage from Hobart Town to Sydney, when on approaching Sydney Heads my attention was attracted by the darkly coloured face of a Gannet, showing very conspicuously as the bird flew round the ship, but unfortunately at too great a distance for a successful shot.

The whole of the plumage of both sexes is pure white, with

the exception of the greater wing-coverts, primaries, secondaries, tertiaries, the tips of the two central and the whole of the lateral tail-feathers, which are of a rich chocolate-brown; irides yellow; naked skin of the face and chin in specimen dull bluish black; legs greenish blue.

Total length 29 inches; bill 5; wing $16\frac{1}{2}$; tail $8\frac{1}{2}$; tarsi $2\frac{1}{4}$.

Sp. 663. SULA FIBER, *Linnaeus*.

BROWN GANNET.

Pelecanus sula et fiber, Linn. Syst. Nat., tom. i. p. 218.

—— *plotus*, Forst. Drawings, 108.

Sula fusca, Briss. Orn., tom. vi. p. 499, tab. 43. fig. 1.

—— *brasiliensis*, Spix, Av. Sp. Nov., tom. ii. tab. 107. p. 84.

—— *fiber*, G. R. Gray, List of Birds in Brit. Mus. Coll., part iii. p. 183.

Brown Booby, Lath. Gen. Syn., vol. vi. p. 613.

Dysporus fiber, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

—— *sula*, Bonap. Consp. Gen. Av., tom. ii. p. 164; *Dysporus*, sp. 1.

Mār-ga, Aborigines of Port Essington.

Booby of the Colonists.

Sula fusca, Gould, Birds of Australia, fol., vol. vii. pl. 78.

The Gannet, which may perhaps be identical with the *Pelecanus fiber* of Linnaeus, is abundantly dispersed round the northern shores of the Australian continent; I have specimens killed within the harbour at Port Essington, and from Raine's Island in Torres' Straits, where it breeds in considerable numbers.

"This species of Booby," says Mr. Macgillivray, "is generally distributed on the north-east and north coasts of New Holland; but I found it breeding only upon Bramble Key, although I once, on Raine's Islet, found a solitary egg. The nest is slovenly made, of dried herbage, a foot in diameter, with scarcely any cavity, and contains two eggs, of which in every instance one was clean and the other very dirty. The eggs, which are white, vary considerably in size. The largest

measured $2\frac{8}{12}$ inches by $1\frac{7}{12}$; the smallest $2\frac{4}{12}$ by $1\frac{7}{12}$, and one of average size, $2\frac{1}{2}$ by $1\frac{3}{4}$ inches. Both sexes incubate, and the birds while sitting on their eggs allowed of a very near approach, and before flying off disgorged the contents of their stomachs, chiefly a species of *Clupea*. I need scarcely add that their bite is very severe. During our visit to Darnley Island I observed several tame Boobies among the native villages, generally perched on the canoes hauled up on the beach. These birds were allowed their full liberty, and after fishing in the weirs upon the reefs until they had procured a sufficiency of food returned to the huts."

The plumage of the two sexes is so precisely similar that it is utterly impossible to distinguish them by external observation; it is true that the colouring of the feet, face, and other soft parts is not always alike, but this difference I believe to be the result of age, rather than of a difference in sex; and if this opinion be correct, the bright yellow-coloured feet are indicative of the bird being fully adult, and the olive-brown of its being immature.

In its habits, manners, mode of life, and in the nature of its food, this species resembles the other members of the genus.

Head, neck, breast, all the upper surface, wings, and tail dark chocolate-brown; under surface pure white, separated from the brown of the breast by a sharply defined line; irides very pale yellow; bill and orbits primrose-yellow, blotched before and beneath the eye with bluish; eyelash light ash-grey; legs and feet pale yellow.

Sp. 664. SULA PISCATOR, *Linn.*

RED-LEGGED GANNET. .

Sula piscator, Linn. Syst. Nat., vol. i. p. 217.

—— *candida*, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 103.

Lesser Gannet, Lath. Gen. Syn., vol. vi. p. 611.

Sula erythrorhyncha, Less. Traité d'Orn., p. 601.

—— *rubripes*, Gould in Proc. of Zool. Soc., part v. p. 156.

—— *rubripeda*, Peale.

Piscatrix candida, Reich. Syst. Av., tab. 53. fig. 853, et tab. 55. figs. 2294, 2295.

Sula piscator, Gould, Birds of Australia, fol., vol. vii. pl. 79.

The Red-legged Gannet is very abundant along the northern shores of the Australian continent: and breeds in great numbers on Raine's Islet, whence several fine specimens were brought by the late Commander Ince, R.N., who, independently of his duties as superintendent of the erection of the beacon on that island, found occupation for his leisure moments in studying its interesting zoology. While acknowledging my obligations to Commander Ince, I am bound to add that I am no less indebted to Mr. Macgillivray for the following notes, as well as for a carefully executed diagram of the bill and face, by means of which I have been enabled to colour the soft parts correctly.

"With the exception," says Mr. Macgillivray, "of one bird which perched on the rigging, and was caught while at sea in the neighbourhood of the Keeling Islands, we found this species only on Raine's Islet, a vegetated sand-bank in the line of the Great Barrier Reef. When we landed there on the 29th of May, it appeared to me that the breeding-season was then over, but I was fortunate enough to find a solitary bird sitting upon its nest, which contained a single egg. The nest consisted of a few roots of a creeper common on the island, forming a platform eighteen inches in diameter laid upon a tuft of herbage. A few days after this, the Gannets, having

been much molested, entirely deserted the island during the day, returning at night in a body of several hundreds, to roost on the ground and low bushes near the centre of the island."

Mr. Macgillivray observed that the colouring of the bill and soft parts also varies with the age of the individual; in the first stage the bill is of a delicate bluish pink, the pink tint predominating at the base of the upper mandible, the bare patch about the eye of a dull leaden hue, and the pouch flesh-coloured; in the second the colouring of these parts is similar but somewhat brighter, and ultimately the irides become grey, and the legs and feet vermilion.

In habits, manners, and general economy it doubtless closely resembles the other members of the group, and procures its fleshy food in a similar manner, by plunging down upon them as they swim near the surface of the water.

The adults have the entire plumage buffy white, with the exception of the wings and tail; the former of which are blackish brown, washed with grey, and the latter pale greyish brown, passing into grey with white shafts; irides grey; legs and feet vermilion.

Family PODICIPIDÆ.

There is no country of any extent wherein Grebes are not to be found; and, as their wing-powers are very limited, they are mostly stationary.

Had I followed my contemporaries, those inhabiting Australia would be described under as many subgenera as there are species, viz. *Podiceps*, *Podiocephalus*, and *Tachybaptus*; but I retain them under the prior appellation; others of each form, it is true, are found elsewhere; still I think it expedient to keep them in the genus *Podiceps*.

Genus *PODICEPS*, *Latham*.

The Great Crested Grebe of Europe and the Great Tippet-Grebe of Australia are both typical members of the genus *Podiceps*, of which I believe other species are found in America, and this is the case with most of the other Australian species.

Sp. 665. *PODICEPS AUSTRALIS*, *Gould*.

AUSTRALIAN TIPPET-GREBE.

Podiceps australis, Gould in Proc. of Zool. Soc., part xii. p. 135.

Ka-lee, Aborigines of the lowland districts of Western Australia.

Diver of the Colonists.

Podiceps australis, Gould, *Birds of Australia*, fol., vol. vii. pl. 80.

This beautiful species of Grebe, which differs but little from the *Podiceps cristatus* of Europe, inhabits the inland waters of Tasmania, and the whole of the southern portions of the continent of Australia, wherever localities occur favourable to its existence. It gives a decided preference to those broad mere-like sheets of water, whose depth is not too great for the growth of rushes and other aquatic plants, among which it constructs its floating nest and rears its progeny. It not only dives extremely well, but stems the billows with amazing power; and I have frequently observed it on the upper part of the Derwent, swimming against wind and tide in a manner that truly surprised me.

The beautiful frill which adorns the neck of the *P. australis* is acquired in the spring, worn during the breeding-season, and then cast off, when the face becomes of a greyish white, or similar in colour to the other part of the neck.

The sexes are at all times alike in plumage; both have the frill of the neck to an equal extent, but the female is generally the smallest in size.

Crown of the head and occipital tufts black; frill black at

the outer edge and rich chestnut in the centre, gradually passing into buffy white on the face; upper surface and wings dark brown; scapularies and secondaries pure white; all the under surface silvery white, stained with brown and chestnut on the flanks; irides red; bill dark horn-colour; upper surface of the tarsi and toes dark olive-green, under surface pale yellow.

Total length 24 inches; bill $2\frac{3}{4}$; wing $7\frac{1}{2}$; tarsi $2\frac{1}{4}$.

Sp. 666. **PODICEPS NESTOR**, *Gould*.

HOARY-HEADED GREBE.

Podiceps poliocephalus, Jard. and Selb. Ill. Orn., vol. i. pl. 13.

Podiceps nestor, Gould in Proc. of Zool. Soc., part iv. p. 145.

Wy-oo-da, Aborigines of the lowland districts of Western Australia.

Dab-chick, Colonists of Swan River.

Poliocephalus nestor, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli.

Podiceps poliocephalus, Gould, *Birds of Australia*, fol., vol. vii. pl. 82.

This species of Grebe is very abundantly dispersed over the inland waters of Tasmania, and is particularly common on the upper part of the river Derwent, where it may be seen during the winter season in flocks or "mobs" of from ten to thirty together, which separate into pairs on the approach of summer; I have also received it from Swan River, and observed it personally in the lagoons of New South Wales; its distribution therefore over all the southern portion of Australia may be said to be general. Its powers of diving, notwithstanding its bushy head, are quite equal to those of the other members of the genus, and its food and general economy are as a matter of course strictly similar. Like the *Podiceps gularis*, it constructs a flat nest of aquatic plants, which may be seen floating on the central portions of the lagoons, not unfrequently within a few yards of the land. The eggs are of a dirty white colour, and four or five in number.

The lengthened hair-like plumes which ornament the face are doubtless merely assumed during the breeding-season, for I have frequently observed specimens in which this character was wholly absent, and not unfrequently others in which it was only partially developed.

The sexes are both adorned with the plumes on the head, and are moreover so nearly alike both in size and in colour that dissection is necessary to distinguish them.

In the breeding-season the head is black, with the forehead and sides of the face beset with long fine hair-like white plumes; all the upper surface and wings brown; base of the primaries and the whole of the secondaries white; under surface silvery grey, tinged with brown on the flanks; bill olive-black with the tip white; irides blackish olive with a very fine circle of yellow near the pupil, and the olive beautifully marked with a darker tint resembling lace-work; lores reddish flesh-colour; feet olive, tinged with yellow on the inner side.

After the breeding-season is over the head becomes brown, the white plumes disappear, and the throat becomes buff.

Sp. 667. *PODICEPS GULARIS*, *Gould*.

BLACK-THROATED GREBE.

Podiceps dominicus, var., Lath.

—— *gularis*, Gould in Proc. of Zool. Soc., part iv. p. 145.

Tachybaptus gularis, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Ung-bu''-r-wa, Aborigines of Port Essington.

Podiceps gularis, Gould, *Birds of Australia*, fol., vol. vii. pl. 81.

This Grebe is very generally dispersed over the whole of the southern portion of Australia, where it inhabits the mouths of the larger rivers as well as the lagoons of the interior, its numbers being much augmented during those seasons of rain which too unfrequently occur in those portions of Australia in which our possessions have been chosen.

Immature birds, either of this or a nearly allied species, have been sent me from Port Essington ; future research alone will enable us to say how far to the north the range of this species may extend. It closely resembles the *Podiceps minor* of Europe, which however it exceeds in size, and from which it may always be distinguished by the colouring of the throat and sides of the face.

The nest is a floating mass of weeds piled up in a rounded form, the top being just level with the surface of the water ; the eggs are four or five in number, of a dirty yellowish white.

The food consists of small fish, mollusca, and insects of various kinds.

The sexes differ but little either in size or colour.

Crown of the head and nape of the neck deep blackish brown, tinged with olive ; throat and sides of the face black ; a mark of deep chestnut rises behind each eye and runs down the side of the neck ; upper surface deep blackish brown ; secondary wing-coverts tipped with white, forming a bar across the wing ; lower part of the neck, chest, and under surface silvery grey, merging into deep brown on the flanks ; bill greenish grey, with a light ash-coloured spot at the extreme tip of the upper mandible ; sides of the upper mandible, from the tip to near the nostrils, and the tip of the lower mandible bluish grey ; base of both mandibles yellowish grey ; gape primrose-yellow ; irides lemon-yellow ; inner side of the tarsi yellowish grey, passing into greenish grey on the outer side and feet.

In winter the markings of the head and neck disappear, and are replaced by a uniform tint of brown, like the remainder of the upper surface.

Total length 10 inches ; bill $1\frac{1}{4}$; wing $4\frac{1}{4}$; tarsi $1\frac{1}{2}$.

Family SPHENISCIDÆ.

This is one of the most isolated families in the whole range of ornithology, and if we turn our thoughts from them to the *Alcadæ* of the northern hemisphere, we may regard the two groups as analogues of each other; they are, however, only analogues, for they are in no way related in affinity; these Paddle-winged Sea Turtles among birds, in fact, constitute a southern group totally distinct from all others. They are considerably diversified in form, and have therefore been divided into no less than six genera, while the species known are perhaps not more than fifteen in number. During the breeding-season they are gregarious and assemble in countless multitudes on certain isolated rocky islands in the South Atlantic and South Pacific Oceans.

The generality of them are adorned with many beautifully coloured markings, and in some instances with plumes which hang gracefully behind their heads. The sexes are alike in colour, showing that ornamentation is not solely given as an attraction to the sexes. Three, if not four, species pertain to the avi-fauna of Australia.

Weddell, in his journal of 'A Voyage towards the South Pole,' thus speaks of the King Penguin as he observed it in the island of South Georgia. "In pride these birds are perhaps not surpassed even by the Peacock, to which, in beauty of plumage, they are indeed very little inferior. During the time of moulting they seem to repel each other with disgust on account of the ragged state of their coats; but as they arrive at the maximum of splendour they reassemble, and no one who has not completed his plumage is allowed to enter the community. Their habit of frequently looking down their front and sides, in order to contemplate the perfection of their exterior brilliancy, and to remove any speck which might sully it, is truly amusing to an observer. . . . During the time of hatching the male is remarkably assiduous; so

that, when the hen has occasion to go off to feed or wash, the egg is transported to him, which is done by placing their toes together and rolling it from one to the other, using their beaks to place it properly. The hen keeps charge of her young nearly a year, and, in teaching them to swim, the mother has frequently to use some artifice, for when the young one refuses to take to the water, she entices it to the side of a rock and pushes it in, and this is repeated until it takes to the sea of its own accord."

We are told by Sir James Clark Ross, in his 'Voyage of Discovery in the Southern and Antarctic Regions': "Possession Island is situated in lat. $71^{\circ} 56'$, and long. $71^{\circ} 7' E.$, composed entirely of igneous rocks, and only accessible on its western side. We saw not the smallest appearance of vegetation, but inconceivable myriads of Penguins completely and densely covered the whole surface of the island, along the ledges of the precipices, and even to the summits of the hills, attacking us vigorously as we waded through their ranks, and pecking at us with their sharp beaks, disputing possession; which, together with their loud coarse notes, and the insupportable stench from the deep bed of guano which had been forming for ages, and which may at some period be valuable to the agriculturalists of our Australian colonies, made us glad to get away again, after having loaded our boats with geological specimens and Penguins." Captain Carmichael, in his description of the island of Tristan d'Acunha, says "the Crested Penguin (*Catarrhactes chrysocoma*, Briss.) conceals itself among the long grass, and in the bottom of ravines where they open upon the shore. Here they assemble in countless multitudes, and keep up a moaning noise, which can be heard at a great distance from the mountain; and the bold, inhospitable coast around you is calculated to excite a train of ideas by no means pleasant."

Genus **CHRYSOCOMA**, *Stephens*.

The members of this genus are among the most ornamental of this fine family, the graceful plumes trending backwards from the sides of their heads adding much to their beauty. They are neither the largest nor the smallest members of the family; some species exceeding them in size, while others are much less.

Sp. 668. **CHRYSOCOMA CATARRACTES.****CRESTED PENGUIN.**

Aptenodytes catarractes, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 558.

—— *chrysocome*, Lath. Ind. Orn., vol. ii. p. 878.

—— *saltator*, Steph.

Pinguinaria cristata, Shaw, Nat. Misc., pl. 437.

Crested Penguin, Lath. Gen. Syn., vol. vi. p. 561.

Chrysocoma catarractes, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli. 1856.

Eudyptes chrysocome, Gould, *Birds of Australia*, fol., vol. vii. pl. 83.

For a fine example of this singular Penguin I am indebted to my friend Ronald C. Gunn, Esq., of Launceston, Tasmania, who informed me that it had been washed on shore on the northern coast of that island after a heavy gale. It is less plentiful in that part of the world than in many others, for although it is occasionally found on the shores of Tasmania and the south coast of Australia, it is most numerous on the islands of Amsterdam and St. Paul. It is found in vast abundance on the island of Amsterdam, where it may often be seen basking and standing erect on the rocks, in company with the seals.

Head, neck, back, and sides black ; over each eye a stripe of pale yellow feathers, which are lengthened into a crest behind ; wings black externally, their posterior edge and under

surface white ; breast and under surface silvery white ; bill reddish brown ; feet greyish white.

The female is said to differ in having the yellow feathers over the eye shorter, or not prolonged into a crest.

Genus EUDYPTULA, *Bonaparte*.

The members of this genus are the most diminutive in size of the entire family. Two species inhabit the southern parts of Australia and Tasmania.

Sp. 669. EUDYPTULA MINOR.

LITTLE PENGUIN.

Aptenodytes minor, Forst. Comm. Goett., tom. iii. p. 147.

Little Penguin, Lath. Gen. Syn., vol. vi. p. 572, pl. 103.

Spheniscus minor, Temm. Man. d'Orn., tom. i. p. 113.

Aptenodyta minor, Vieill. Ency. Méth. Orn., part i. p. 68, pl. 17. fig. 1.

Eudyptula minor, Bonap. Compt. Rend. de l'Acad. Sci., tom. xli. 1856.

Koróra, Aborigines of New Zealand.

Spheniscus minor, Gould, Birds of Australia, fol., vol. vii. pl. 84.

This species is very abundant all round Tasmania, in Bass's Straits, and on the south coast of Australia generally, where it frequents those parts of the sea that are favourable to its habits and mode of life, and where the depth of the water is not too great to prevent its diving to the bottom. It is also often seen in the deep bays and harbours, and some distance up the great rivers, but never I believe in fresh water ; seas abounding in small islands, whose sides are not too precipitous for it to ascend for the purpose of breeding, being the localities most frequently resorted to. It is so numerous on nearly all the low islands in Bass's Straits, from September to January, that any reasonable number of the birds and their eggs may be procured without the slightest difficulty.

From the weight of the body and the density of the plumage, this bird swims very deep in the water, the head, neck, and upper part of the back only being above the surface. Its powers of progression in the deep are truly astonishing; it bounds through this element like the porpoise, and uses its short fin-like wings as well as its feet to assist it in its progress; its swimming powers are in fact so great, that it stems the waves of the most turbulent seas with the utmost facility, and during the severest gale descends to the bottom, where, among beautiful beds of coral and forests of sea-weed, it paddles about in search of crustaceans, small fish, and marine vegetables, all of which kinds of food were found in the stomachs of those I dissected.

A considerable portion of the year is occupied in the process of breeding and rearing the young, in consequence of its being necessary that their progeny should acquire sufficient vigour to resist the raging of that element on which they are destined to dwell, and which I believe they never again leave until by the impulse of nature they in their turn seek the land for the purpose of reproduction. Notwithstanding this care for the preservation of the young, heavy gales of wind destroy them in great numbers, hundreds being occasionally found dead on the beach after a storm; and when the sudden transition from the quiet of their breeding-place to the turbulence of the ocean, and the great activity and muscular exertion then required, are taken into consideration, an occurrence of this kind will not appear at all surprising.

Some of the islands in Bass's Straits, where the Penguins are numerous, are completely intersected by paths and avenues, and so much care is expended by the birds in the formation of these little walks that every stick and stone is removed, and in some instances even the herbage, by which the surface is rendered so neat and smooth as to appear more like the work of the human hand than the labour of one of the lower animals. The islands generally chosen for this purpose are

also resorted to by the "Mutton Bird" (*Nectris brevicauda*), both species appearing to breed in perfect harmony.

From what I personally observed while residing on the breeding-islands of this bird, the task of incubation would seem to be mutually performed by both sexes, each regularly relieving the other during the night.

The eggs are either deposited in a depression of the surface of the ground, or in a slanting hole of moderate depth; they are two in number, and of a small size compared with the dimensions and weight of the bird; they are white, two inches and a half long and two inches broad.

From their incapacity for running and their total inability to fly, the parent birds are very easily captured, and when taken with the hand offer no other resistance than a smart peck with the bill. The young, until they are nearly as large as the adult, are covered with a thick coating of long down, which is suddenly thrown off and replaced by short stiff feathers, which become perfectly developed before the bird ventures upon the sea.

The note is hoarse and discordant, almost as loud and somewhat resembling the barking of a dog.

There is no external difference observable in the sexes, which may be thus described:—

The feathers of the upper surface light blue, with a fine black line down the centre of each; the whole of the under surface silvery white; eyes flat; irides pale buffy white, with a net-work of dark brown round the outer margin, and with a fine ring of the same colour near the pupil, giving the appearance of a double iris; bill horn-colour, deepening into slaty black on the culmen and tip; feet yellowish white; nails black.

Sp. 670. EUDYPTULA UNDINA, *Gould*.

FAIRY PENGUIN.

Aptenodytes undina, Gould in Proc. of Zool. Soc., part xii. p. 57.

Eudyptula minor, Bonap. Compt. Rend. de l'Acad. Sci., 1856.

Spheniscus undina, Gould, *Birds of Australia*, fol., vol. vii. pl. 85.

This is undoubtedly the smallest Penguin yet discovered, for it is considerably less in size than the *S. minor*, from which it also differs in its comparatively smaller wing, and in the deeper blue colouring of the upper surface of the body: by many persons it might be regarded as the young of *S. minor*, but I invariably found the young of that species, while still partially clothed in the downy dress of immaturity, to exceed considerably in size all the examples of this species, even when adorned in the adult livery, and possessing the hard bill of maturity; there can be no question, therefore, of the two birds being distinct.

For the first example that came under my notice I am indebted to the kindness of Ronald C. Gunn, Esq., who informed me that it was one of some hundreds that had been thrown ashore dead at Circular Head, during one of those severe gales that occasionally occur in Bass's Straits; subsequent to this the bird came under my own observation, and I obtained another example on Waterhouse Island, where it was breeding.

Its habits, manners, mode of life, and food are precisely similar to those of *S. minor*.

The whole of the upper surface, flanks, and upper side of the wings glossy light blue, with a narrow stripe of black down the centre of each feather, the black mark being broadest and most conspicuous on the back; all the under surface of the body, the under side and the inner margin of the upper side of the wings, and the inner webs of the tail-feathers silky white; bill reddish brown beneath, black above; feet yellowish white.

Total length $13\frac{1}{2}$ inches; bill $1\frac{1}{4}$; tarsi $\frac{3}{4}$.



BIRDS OF AUSTRALIA.

A P P E N D I X.

IN the Introduction to the present Handbook (vol. i. p. 6) I have stated that I should confine my remarks "to the birds of the Australian Continent, Tasmania, and those Islands of the Great Barrier Reef which properly belong to Australia," and this I have accordingly done in the preceding pages; but I now think it will be well to append an account of the species pertaining to other countries, about twenty-four in number, which have been figured in the folio edition and the three supplementary parts which have since been issued, as I believe that the interest of the present volumes will thereby be enhanced to those who possess the illustrated work. The species alluded to comprise the curious *Didunculus strigirostris*, *Semioptera wallacei*, *Strigops habroptilus*, and a few others from New Zealand, Norfolk and Lord Howe's Islands, &c. These will be arranged in the same order as those which have preceded them. The names connected with these additional species will be found in their proper place in the general Index.

Family STRIGIDÆ.

Genus SCELOGLAUX, *Kaup.*

But one species of this highly curious form is at present known.

Sp. 1. SCELOGLAUX ALBIFACIES.

WEKAU.

Athene albifacies, G. R. Gray, *Voy. of Ereb. and Terr. Birds*, p. 2.

Sceloglaux albifacies, Kaup.—G. R. Gray, *Cat. of Gen. and Subgen. of Birds in Brit. Mus.*, p. 8.

Sceloglaux albifacies, Gould, *Birds of Australia*, fol., Supplement, pl.

This bird is one of the many strange inhabitants of our antipodal country New Zealand. An Owl it unquestionably is, but how widely does it differ from every other member of its family! Its prominent bill, swollen nostrils, and small head are characters as much accipitrine as strigine; its short and feeble wings indicate that its powers of flight are limited, while its lengthened legs and abbreviated toes would appear to have been given to afford it a compensating increase of progression over the ground. On what does this bird live? There are no indigenous small quadrupeds in the country upon which we might infer, from its structure and what we know of the economy of other terrestrial Owls (such as the Burrowing Owl of North America, *Surnia cunicularia*), it would feed. Does it partially feed on the larvæ of such Lepidoptera as *Heptamelus virescens*, so subject to the attack of that singular fungus the *Sphæria Robertsi*? It would indeed be interesting to ascertain how it maintains existence.

Of this very rare and singular bird only two examples are known to me: of these one is in the British Museum, the other in the collection of J. H. Gurney, Esq., a gentleman

much attached to Ornithology, as his liberal donations to the Norwich Museum abundantly testify. Both these specimens were collected on the middle and south islands of New Zealand: that in the British Museum is the original of Mr. G. R. Gray's *Athene albifacies* and the type of Dr. Kaup's genus *Sceloglaux*.

The full-sized figure of this bird in the folio edition may be the means of making it more generally known; I trust that the attention of travellers will be directed to the species, and that ere long we may be furnished with some account of its habits and economy, of which, at present, nothing is known.

Mr. Percy Earl, who obtained at Waikonaiti, in the south island of New Zealand, the specimen in the British Museum, states that it is known to the natives by the name of *Wekau*.

Plumage of the upper surface chocolate-brown, each feather margined with fulvous; some of the scapularies with a lengthened mark of dull white within the margin and others on the edge; primaries spotted along the outer margin with buffy white; secondaries and tertiaries crossed by indistinct or interrupted bars of buffy white, assuming on those near the body the form of spots; spurious wing very dark brown; tail brown, crossed by five narrow irregular bars of buffy white and tipped with fulvous; fascial disk pale sandy-brown, except on the forehead, throat, and ear-coverts, which are whitish, each feather with a streak of brownish-black down the centre; feathers of the under surface deep fulvous, with a broad mark of dark brown down the centre of each, the former tint increasing on the lower part of the abdomen and thighs, when it again gradually fades into dull white on the lower part of the tarsi; toes sickly-green, thinly beset with hair-like feathers; cere much developed and of a lead colour; bill bluish horn-colour at the base, passing into yellowish horn-colour at the tip, the under mandible yellow.

Family SAXICOLIDÆ.

Sp. 2. PETROICA ERYTHROGASTRA.

NORFOLK ISLAND ROBIN.

Muscicapa erythrogastra, Lath. Ind. Orn., vol. ii. p. 479.

—— *multicolor*, Gmel. Edit. Linn. Syst. Nat., vol. i. p. 944.

Red-bellied Flycatcher, Lath. Gen. Syn., vol. iii. p. 843. pl. 50.

Petroica pulchella, Gould in Proc. of Zool. Soc., part vii. p. 142, male.

—— *modesta*, Gould Ib., part v. p. 147, female.

Petroica erythrogastra, Gould, Birds of Australia, fol., vol. iii. pl. 4.

Under the impression that this Robin, which I believe to be strictly confined to Norfolk Island, and the *Petroica multicolor*, with which it has been confounded, were identical, and that the terms *erythrogastra* and *multicolor* were synonymous, I was induced to characterize the male under the name of *pulchella*, and the female under that of *modesta*, believing as I then did that they were distinct; subsequent research has however enabled me to perceive the errors into which I had fallen, and I now proceed to point out the differences between the two species, and to restore to the Norfolk Island bird the term *erythrogastra*, originally applied to it by Latham. The *P. erythrogastra* may be distinguished then from its near ally by the greater size of the bill; by the greater extent and more silvery hue of the white feathers on the forehead; by the tail being wholly black, while in the *P. multicolor* the lateral feathers are white; by the white on the wing forming a large spot near the shoulder, instead of a line as long as the secondaries; and by the scarlet of the breast and abdomen being much more intense in colour: the females of the two birds also differ from each other, the tail of the *P. erythrogastra* being wholly brown, while that of the *P. multicolor* has the lateral tail-feathers marked with white.

The male has the forehead silvery white; a small patch on

the wings near the shoulder, under wing-coverts, the flanks, and under tail-coverts white; chest and abdomen very rich scarlet, the remainder of the plumage deep black; bill black; feet brown.

The female has the crown of the head, all the upper surface, wings, and tail reddish brown; throat white, tinged with brown; chest and centre of the abdomen washed with scarlet; lower part of the abdomen and under tail-coverts white; flanks brown; bill blackish brown; feet yellowish brown.

Family MERULIDÆ.

Sp. 3. PITTA VIGORSI, *Gould*.

VIGORS' PITTA.

Pitta brachyura, Vig. and Horsf. in Linn. Trans., vol. xv. p. 218.

Brachyurus vigorsi, Bonap. Consp. Gen. Av., tom. i. p. 255, *Brachyurus*, sp. 12.

Coloburis vigorsi, Cab. et Heine, Mus. Hein., Theil ii. p. 4.

Pitta vigorsii, Gould, *Birds of Australia*, fol., vol. iv. pl. 2.

The single specimen of this beautiful species of *Pitta* which formed part of the late collection of the Linnean Society of London, was considered by Vigors to be identical with the *Pitta brachyura*, but it differs from that species in many important characters, among the most conspicuous of which may be noticed its larger size, and the narrow streak of light greenish grey which passes from the nostrils over each eye, and nearly surrounds the occiput.

I have not been able to obtain any decided information respecting the portion of Australia from which it was said to have been obtained, and I think it very probable that it may have been procured in one of the neighbouring islands off the north coast of that country, especially as it is now stated to inhabit Lombock.

Crown of the head, ear-coverts, and back of the neck jet-black; a narrow stripe of greenish grey commences at the nostrils, passes over each eye, surrounds the crown, and nearly unites at the occiput; back, scapularies, outer edges of the secondaries, and the greater wing-coverts bronzy green; shoulders, rump, and upper tail-coverts fine lazuline blue; throat white; chest, flanks, and thighs tawny buff; centre of the abdomen dark blood-red, passing into scarlet on the under tail-coverts; primaries black, with a white bar across the centre of the third, fourth, fifth, and sixth; tail black, tipped with green; bill dark brown; legs flesh-colour.

Sp. 4. **MERULA POLIOCEPHALA.**

GREY-HEADED BLACKBIRD.

Turdus poliocephalus, Lath. Ind. Orn. Supp., xliv. 25.

— *fuliginosus*, Lath. in Lamb. Icon. ined., vol. ii. pl. 42.

Merula nestor, Gould.—Jard. and Selb. Ill. Orn., new series, pl. 37.

Ash-headed Thrush, Lath. Gen. Syn. Supp., vol. ii. App. p. 373.

Turdus fuliginosus, Lath. Ind. Orn. Supp., xlii. ?

Sooty Thrush, Lath. Gen. Syn. Supp., vol. ii. p. 185 ?

Merula poliocephala, Gould, *Birds of Australia*, fol., Supplement, pl.

The present species appears to have been known for a much longer period than I had supposed; indeed I was not aware that Latham had given a good description of the bird under the name of *Turdus poliocephalus*, otherwise I should not have proposed the additional name of *Nestor*. When Norfolk Island was first made a penal settlement, this bird was doubtless very common there; but I have reason to believe it has now become scarce, having been partially extirpated by the Government officers and convicts who lived on this beautiful island for many years. Some short time since, I described a second species of this form from Lord Howe's Island, under the name of *Merula vinitincta*;

and I have seen a third species in the British Museum, which I believe is from New Caledonia. All these have a general resemblance both as to form and style of colouring; and it would be as well perhaps if they were formed into a new genus; for I have always considered them somewhat removed from the true *Merulæ*, of which the Blackbird of our own island is a familiar example. I have long wished to know something of the habits and economy of these birds, but at present nothing has been ascertained: there appears to be less difference in the colouring of the sexes than occurs among the *Merulæ* of the North; for the birds I consider to be females are very similarly coloured, and are only a trifle less in size.

Head, neck, and front of the throat light ashy brown, the remainder of the plumage dark sooty black; in some specimens the under tail-coverts have a stripe of dull white down the centre of each; bill, eyelash, and feet yellow.

Sp. 5. *MERULA VINITINCTA*, *Gould*.

VINOUS-TINTED BLACKBIRD.

Merula vinitincta, Gould in Proc. of Zool. Soc., part xxiii. p. 15.

Merula vinitincta, Gould, *Birds of Australia*, Supplement, fol., pl.

Although birds of this form are common in Europe, India, Africa, and South America, none have yet been discovered in Australia and New Zealand; yet, strange to say, two very distinct species inhabit the small group of islands lying nearly midway between those two countries. This is rather surprising, and the ornithologist is at a loss to conceive why such a form should thus be dotted over the face of the globe; that, however, such is the fact, is proved by Mr. Macgillivray having procured two fine examples of the present bird on Lord Howe's Island. I regret that no account of their habits accompanied the specimens, for it would be most interesting

to know the character of the vegetation and other circumstances favourable to their existence. In size and form the *Merula vinitincta* very closely approximates to the *M. nestor* of Norfolk Island, but differs very considerably in its colouring.

The male has the head and nape blackish-brown; upper surface and wing-coverts reddish-brown; wings brown margined with olivaceous; tail brown; throat dark bluish-grey; under surface vinaceous red; bill bright gamboge-yellow; eyelash yellow; tarsi and toes yellow.

Total length 8 inches; bill 1; wing $4\frac{1}{8}$; tail $3\frac{3}{8}$; tarsi $1\frac{1}{4}$.

Family — ?

Genus NEOMORPHA, *Gould*.

New Zealand claims for her avi-fauna the only species of this highly curious form at present known, a form rendered the more singular from the great difference in the development of the mandibles in the two sexes.

Sp. 6. NEOMORPHA GOULDII, *G. R. Gray*.

HUIA.

Neomorpha acutirostris, Gould in Proc. of Zool. Soc., part iv. p. 144.

—— *crassirostris*, Gould, Ib., p. 145.

—— *gouldii*, G. R. Gray, List of Gen. of Birds, p. 12.

Huia, Aborigines of New Zealand.

Neomorpha gouldii, Gould, Birds of Australia, fol., vol. iv. pl. 19.

Two specimens of this highly curious and anomalous bird, male and female, wanting the legs and wings, were described by me in 1836, when, from the great difference in the form and length of their bills, I very naturally concluded that they constituted two distinct species, many genera, even, having been founded upon more trivial differences of character. Mr. George Robert Gray, however, entertained a different opinion

and, while engaged upon his valuable little work entitled 'A List of the Genera of Birds,' conceiving they were sexes of the same species, and that, therefore, both my names were inappropriate, inasmuch as, if either were retained, it might lead to some misconception, has been pleased to dedicate it to myself, a compliment which I duly appreciate; and I have only to hope that this name may be adopted by ornithologists.

"These birds," says Dr. Dieffenbach, "which the natives call *Huia*, are confined to the hills in the neighbourhood of Port Nicholson, whence the feathers of the tail, which are in great request among the natives, are sent as presents to all parts of the island. The Maories regard the bird with the straight and stout beak as the male, and the other as the female. In three specimens I shot this was the case, and both birds are always together. These fine birds can only be obtained with the help of a native, who calls them with a shrill and long-continued whistle, resembling the sound of the native name of the species. After an extensive journey in the hilly forest in search of them, I had at last the pleasure of seeing four alight on the lower branches of the trees near which the native accompanying me stood. They came quick as lightning, descending from branch to branch, spreading out the tail, and throwing up the wings. Anxious to obtain them I fired, but they generally come so near that the natives kill them with sticks. Their food consists of seeds and insects: of their mode of nidification the natives could give me no information.

Mr. E. L. Layard, in his 'Ornithological Notes from the Antipodes,' says, "'The 'Huia,' ever a rare bird, is said to be almost extinct. The tail-feathers are still sought after to adorn the heads of the chiefs. It is singular that birds not now used as food by the natives should be scarce and more wary than in olden times when they formed one of the staple articles of diet. Can this arise from their fear at the *sound* of firearms?"—*Ibis*, 1863, p. 244.

The whole of the plumage black, glossed with green; the tail largely tipped with white; bill horn-colour, much darker at the base; wattles rich orange; legs and toes blackish horn-colour; claws light horn-colour.

Family EPIMACHIDÆ.

Genus SEMIOPTERA, G. R. Gray.

At present the single species known of this genus stands alone and is rendered very remarkable by the white plumes which spring from the centre part of each wing.

Sp. 7. SEMIOPTERA WALLACEI, G. R. Gray.

STANDARD-WING.

Paradisea wallacei, G. R. Gray in Proc. of Zool. Soc., part xvii. p. 130.

Semioptera, G. R. Gray, Ib.

Semioptera wallacei, Gould, Birds of Australia, fol., Supplement, pl.

The Standard-wing, the most remarkable Insessorial bird that has been discovered for many years, was obtained by A. R. Wallace, Esq., in the island of Batchian, one of the Moluccas, which, according to Guthrie's 'Geography,' "produces cloves, is very fruitful, and belongs to the Dutch; long. 125° 5' E." How much gratified Mr. Wallace must have been when this remarkable form first met his gaze! and how enthusiastically does he write on this and the other objects with which he was surrounded:—

In a letter to Mr. S. Stevens he says, "Here I have been only five days, yet I believe I have already secured the *finest and most wonderful* bird in the island. I consider it the *greatest* discovery I have yet made; and it gives me hopes of getting other species in Gilolo and Ceram. There is also here a species of Monkey—much further eastwards than in any

other island ; so you see this is a most curious locality, combining forms of the East and West of the Archipelago, yet with species peculiar to itself. It also differs from all the other Moluccas in its geological formation, containing iron, coal, copper, and gold, with a glorious forest vegetation, and fine large mountain streams : it is a continent in miniature. The Dutch are working the coals ; and there is a good road to the mines, which gives one easy access to the interior forests."

At the meeting of the Zoological Society, held on the 22nd March, 1859, Mr. G. R. Gray remarked that "this bird proves to be a new form : it has, springing from the lesser coverts of each wing, two long shafts, both of which are webbed on each side at the apex. It is the possession of these peculiar winged standards that induces me to propose for it the subgeneric appellation of *Semioptera* ; and I further add the provisional specific name of *wallacei*, which appellation I think is justly due to Mr. Wallace for the indefatigable energy he has hitherto shown in the advancement of ornithological and entomological knowledge, by visiting localities rarely if ever travelled by naturalists."

This beautiful bird is very closely allied to *Ptilorhis*, and on comparing it with the well-known Rifle-bird of Australia, *Ptilorhis paradisea*, it will be seen that they are very similar both in their structure and in the disposition of their markings : the same great difference in the outward appearance of the sexes also occurs in both.

Mr. Wallace informed me in a letter, which I subsequently read at a meeting of the Zoological Society, that "the *Semioptera* frequents the lower trees of the virgin forests, and is almost constantly in motion. It flies from branch to branch and clings to the twigs and even to the vertical smooth trunks almost as easily as a Woodpecker. It continually utters a harsh croaking cry, something between that of *Paradisea apoda* and the more musical cry of *Cicinnurus regius*. The males, at short intervals, open and flutter their wings, erect the long

shoulder feathers, and expand the elegant shields on each side of the breast. Like the Birds of Paradise, the females and young birds far outnumber the fully plumaged birds, which renders it probable that the extraordinary accessory plumes are not fully developed until the third or fourth year. The bird seems to feed principally upon fruit, but it probably takes insects occasionally.

“I have obtained a few examples of apparently the same bird from *Gilolo*, but in these the crown is of a more decided violet hue, and the plumes of the breast are much larger.”

On the basal half of the upper mandible a series of erected tuft-like feathers of a pale sandy buff, blending on the forehead into the delicate velvety dove-coloured feathers of the crown and occiput; sides of the head, back of the neck, and upper surface light brown, becoming darker and having a velvety appearance on the back and scapularies, each of these feathers has also a very narrow edging of a lighter hue; wings light brown, fading into buffy white, with a silver gloss at the tips of the primaries and secondaries; shafts of the primaries white; the two lengthened plumes springing from each shoulder snowy white; tail brown with white shafts, and becoming of a silvery light brown at the tip; throat, neck, chest, and projecting side-feathers of the breast bordered with brilliant green, giving it a scaled appearance; flanks washed with the same colour, but less brilliant; thighs light brown; irides deep blue; bill horny-olive; feet orange; claws horny.

The female has the tuft on the upper mandible and the crown of the head the same as in the male, and is entirely devoid of the green colouring and lengthened plumes both of the breast and wings, her entire plumage being brown, without ornamentation of any kind.

Family — ?

Sp. 8. ZOSTEROPS ALBIGULARIS, *Gould*.

WHITE-BREASTED ZOSTEROPS.

Zosterops albogularis, Gould in Proc. of Zool. Soc., part iv. p. 75.

Zosterops albogularis, Gould, Birds of Australia, fol., Supplement, pl.

The members of the genus *Zosterops* have a most extensive range over the Old World. India proper has its own peculiar species, and so have Southern Africa, Japan, and China; but the countries in which the species are most numerous are Australia, Lord Howe's and Norfolk Islands, and the great Papuan group, including New Caledonia and the adjacent islands: in all these localities they occur in abundance. Every island appears to have its own particular species, and some of them two or three: Lord Howe's Island has two, and in Norfolk and Philip Islands two others occur, and there are at least three or four very distinct species in Australia. The present bird was characterized by me as long since as August 1836; its native country is Norfolk Island, whence specimens have been sent from time to time ever since it was formed into a penal settlement. As is the case with the other members of the genus, there appears to be but little difference in the outward characters of the sexes, all the specimens that have reached this country being very similar.

All the upper surface and wing-coverts greenish olive, strongly tinged with chestnut on the back; wings and tail brown, margined with olive-green; a broad zone of white feathers surrounds each eye, bounded in front and below with black; throat and centre of the abdomen white; flanks pale chestnut; under tail-coverts pale yellow; bill and legs lead-colour.

Total length $5\frac{1}{2}$ inches; bill $\frac{7}{8}$; wing 3; tail $2\frac{1}{2}$; tarsi 1.

Sp. 9. ZOSTEROPS TENUIROSTRIS, *Gould*.

LONG-BILLED ZOSTEROPS.

Zosterops tenuirostris, Gould in Proc. of Zool. Soc., part iv. p. 76.

— *lateralis*, Gray and Mitch. Gen. of Birds, vol. i. p. 198, *Zosterops*, sp. 5.

Zosterops tenuirostris, Gould, Birds of Australia, fol., Supplement, pl.

The specific name of *tenuirostris* has been given to this bird from the circumstance of its bill being more prolonged than those of the other members of the genus ; its body is also more slender and elegant in contour than that of any of its congeners. Its native country is Norfolk Island, whence all the specimens I have seen have been forwarded by way of New South Wales. It is a very distinct and well-defined species, and is of large size when compared with most of its near allies. Of its manners and mode of life nothing has yet been recorded, which is much to be regretted, as they might present some peculiarities consequent upon the particular character of the vegetation of the remote island it inhabits, the native productions of which differ very considerably from that of Australia. I fear the time is gone by when we might expect to glean any information respecting it, for it can scarcely be supposed that the Pitcairn Islanders, who now inhabit Norfolk Island, have acquired a taste for natural history.

All the specimens I have seen being similarly coloured, I believe that the sexes, like those of *Zosterops albogularis*, do not differ in outward appearance.

Head, all the upper surface, and wing-coverts olive-green, brightest on the head and upper tail-coverts ; wings and tail brown, margined with olive-green ; throat yellow, stained with red in the centre ; centre of the abdomen and under tail-coverts pale yellow ; flanks olive brown ; bill and legs light brown, inclining to lead-colour ; eye surrounded by a

narrow zone of white feathers, bounded below by a line of blackish brown.

Total length $5\frac{5}{8}$ inches ; bill $\frac{3}{4}$; wing $2\frac{5}{8}$; tail $2\frac{1}{8}$; tarsi $\frac{7}{8}$.

Sp. 10. **ZOSTEROPS STRENUUS**, *Gould*.

ROBUST ZOSTEROPS.

Zosterops strenuus, Gould in Proc. of Zool. Soc., part xxiii. p. 166.

***Zosterops strenuus*, Gould, Birds of Australia, fol., Supplement, pl.**

Lord Howe's Island, although but scantily supplied with vegetation, is not devoid of bird-life even of the great order of Insesores, being inhabited by at least two species of the present genus. Her Majesty's Ship 'Herald,' commanded by Captain Denham, having paid a visit to this interesting spot in the wide ocean, Mr. Macgillivray had an opportunity of extending his fame as a successful naturalist by securing and sending, with many other interesting objects, an example of each of these species, which I find to be quite different from all others that have come under my notice. Its prominent characters consist in its comparatively great size, robust body and powerful bill ; at the same time, in the general style of its colouring, in its snow-white eye-ring, and in all other essential points, it closely agrees with the other species of the genus of which it is a member.

The only specimen of this new bird which has yet been transmitted to this country now forms part of the National Collection.

Head and upper surface bright olive-green, with a mark of dark grey across the shoulders ; wings and tail slaty-brown, margined with greenish-olive ; eyes surrounded by the usual ring of white feathers, beneath which is a narrow line of black ; chin and throat yellow ; flanks pale vinaceous-brown ; centre of the abdomen nearly white ; under tail-coverts pale yellow ; bill and feet bluish-black.

Total length $5\frac{3}{4}$ inches ; bill 1 ; wing $2\frac{3}{4}$; tail $2\frac{1}{4}$; tarsi $\frac{7}{8}$.

Sp. 11. **ZOSTEROPS TEPHROPLEURUS**, *Gould*.**GREY-BREASTED ZOSTEROPS.***Zosterops tephropleurus*, Gould in Proc. of Zool. Soc., part xxiii. p. 166.*Zosterops tephropleurus*, Gould, *Birds of Australia*, fol., Supplement, pl.

The Grey-breasted Zosterops, the second species sent from Lord Howe's Island by Mr. Macgillivray, rather exceeds in size the well-known Australian *Z. dorsalis*, and moreover differs in having a much more robust bill and less highly coloured flanks; in other respects the two birds are very similar.

Head and upper surface bright olive-green, with a wash of grey across the shoulders; wings and tail slaty-brown, margined with olive-green; throat dull yellow; around the eyes a circle of white feathers, below which is a mark of black; under surface pale vinaceous-brown, becoming gradually paler on the lower part of the abdomen, and passing into the pale yellow of the under tail-coverts.

Total length $4\frac{3}{4}$ inches; bill $\frac{5}{8}$; wing $2\frac{3}{8}$; tail $2\frac{1}{8}$; tarsi $\frac{3}{4}$.

Among the many pleasing recollections connected with my explorations in Australia, none are more grateful than those pertaining to this little group of birds, whose pretty cup-shaped nests and spotless blue eggs remind one of those of our own Hedge Accentor.

Family PSITTACIDÆ.**Genus STRIGOPS**, *G. R. Gray*.

I question if any country is tenanted by so many extraordinary and anomalous ornithological forms as New Zealand. The singular forms there found may be regarded as a set-off to the almost entire absence of Mammals. Among the birds the *Strigops* will ever be regarded with interest; and it is to be regretted that so curious a bird should be nearly extinct,

and equally so that no law for the preservation of such interesting objects has been instituted.

Sp. 12. STRIGOPS HABROPTILUS, *G. R. Gray.*

KAKAPO.

Strigops habroptilus, Gray, Gen. of Birds, vol. ii. p. 427. pl. cv.

Strigops habroptilus, Gould, Birds of Australia, fol., Supplement, pl.

Long before 1845, when a skin of this extraordinary Parrot was for the first time sent to Europe, we had conclusive evidence of the existence of the species, from the circumstance of plumes made of its feathers being worn by the Maories. It is somewhat strange, however, that such a lengthened period should have elapsed after the discovery and possession of New Zealand before so singular a bird should have found its way to Europe. At no very distant date it doubtless inhabited alike all the islands of the New Zealand group; but it probably no longer exists in the northern island, its extirpation thence being doubtless attributable to a variety of causes: it is that portion of the country in which the natives have chiefly resided, and the introduction since the visit of the celebrated navigator Cook, of the Pig, the Dog, the Cat, and that universal pest the brown or Norway Rat, has doubtless tended greatly to produce such a result; for these animals having now become wild, we may reasonably infer that they have played no inconsiderable part in the destruction, not only of this comparatively helpless bird, but of many others; the time is probably not far distant when these marauders will obtain a footing in the middle and southern islands, the result of which may be anticipated by what has already occurred.

The first published account of this singular bird is that given by Dr. Lyall, R.N., in the Proceedings of the Zoological Society of London for 1852, which I here transcribe:—

“Although the *Kakapo* is said to be still found occasionally

on some parts of the high mountains in the interior of the north island of New Zealand, the only place where we met with it, during our circumnavigation and exploration of the coasts of the islands in H.M.S. 'Acheron,' was at the S.W. end of the middle island. There, in the deep sounds which intersect that part of the island, it is still found in considerable numbers, inhabiting the dry spurs of hills or flats near the banks of rivers, where the trees are high, and the forest comparatively free from fern or underwood.

"The first place where it was obtained was on a hill nearly 4000 feet above the level of the sea. It was also found living in communities on flats near the mouths of rivers close to the sea. In these places its tracts resembled footpaths made by man, and led us at first to imagine that there must be natives in the neighbourhood. These tracks were about a foot wide, regularly pressed down to the edges, which are two or three inches deep amongst the moss, and cross each other usually at right angles.

"The *Kakapo* lives in holes under the roots of trees, and is also occasionally found under shelving rocks. The roots of many New Zealand trees growing partly above ground, holes are common under them; but where the *Kakapo* is found many of the holes appeared to have been enlarged, although no earth was ever found thrown out near them. There were frequently two openings to these holes, and occasionally, though rarely, the trees over them were hollow for some distance up.

"The only occasion on which the *Kakapo* was seen to fly was when it got up one of these hollow trees and was driven to an exit higher up. The flight was very short, the wings being scarcely moved; and the bird alighted on a tree at a lower level than the place from whence it had come, but soon got higher up by climbing, using its tail to assist it.

"Except when driven from its holes, the *Kakapo* is never seen during the day, and it was only by the assistance of dogs that we were enabled to find it.

“ Before dogs became common, and when the bird was plentiful in inhabited parts of the islands, the natives were in the habit of catching it at night, using torches to confuse it. It offers a formidable resistance to a dog, and sometimes inflicts severe wounds with its powerful claws and beak. At a very recent period it was common all over the west coast of the middle island, but there is now a race of wild dogs said to have overrun all the northern part of this shore, and to have almost extirpated the *Kakapos* wherever they have reached. Their range is said to be at present confined by a river or some such physical obstruction, and it is to be feared that if they once succeeded in gaining the stronghold of the *Kakapo* (the S.W. end of the island) the bird may soon become extinct.

“ During the latter half of February and the first half of March, whilst we were amongst the haunts of these birds, we found young ones in many of the holes, frequently only one, never more than two, in the same hole. In one case where there were two young ones I found also an addled egg. There was usually, but not always, an old bird in the same hole with the young ones.

“ They build no nest, but simply scrape a slight hollow amongst the dry dust formed of decayed wood. The young were of different ages, some being nearly fully fledged, and others covered only with down. The egg is white and about the size of a pigeon's, two inches and an eighth long by one inch and nine-sixteenths broad.

“ The cry of the *Kakapo* is a hoarse croak, varied occasionally by a discordant shriek when irritated or hungry. The Maories say that during winter they assemble together in large numbers in caves, and at the times of meeting, and, again before dispersing to their summer haunts, that the noise they make is perfectly deafening.

“ A good many young ones were brought on board the ship alive. Most of them died a few days afterwards, probably from want of sufficient care; some died after being

kept a month or two, and the legs of others became deformed after they had been a few weeks in captivity. The cause of the deformity was supposed to be the want of proper food, and too close confinement. They were fed chiefly on soaked bread, oatmeal, and water and boiled potatoes. When let loose in a garden they would eat lettuces, cabbages, and grass, and would taste almost every green leaf that they came across. One, which I brought within six hundred miles of England (when it was accidentally killed), whilst at Sydney, ate eagerly of the leaves of a *Banksia* and several species of *Eucalyptus*, as well as grass, appearing to prefer them all to its usual diet of bread and water. It was also very fond of nuts and almonds, and during the latter part of the homeward voyage lived almost entirely on Brazilian ground-nuts.

“On several occasions the bird took sullen fits, during which it would eat nothing for two or three days at a time, screaming and defending itself with its beak when any one attempted to touch it. It was at all times of an uncertain temper, sometimes biting severely when such a thing was least expected. It appeared to be always in the best humour when first taken out of its box in the morning, hooking on eagerly with its upper mandible to the finger held down to lift it out. As soon as it was placed on the deck it would attack the first object which attracted its attention—sometimes the leg of my trowsers, sometimes a slipper or a boot. Of the latter it was particularly fond; it would nestle down upon it, flapping its wings and showing every symptom of pleasure. It would then get up, rub against it with its sides, and roll upon it on its back, striking out with its feet whilst in this position.

“One of these birds, sent on shore by Capt. Stokes to the care of Major Murray of the 65th Regiment at Wellington, was allowed to run about his garden, where it was fond of the society of the children, following them like a dog wherever they went.

“Nearly all the adult *Kukapos* which I skinned were exceedingly fat, having a thick layer of oily fat or blubber on the breast which it was very difficult to separate from the skin. Their stomachs contained a pale green, sometimes almost white, homogeneous mass, without any trace of fibre in it.

“There can be little doubt but that their food consists partly of roots (their beaks are usually more or less covered with indurated mud), and partly of the leaves and tender shoots of various plants. At one place where the birds were numerous we observed that the young shoots of a leguminous shrub growing by the banks of a river were all nipped off, and this was said by our pilot, who had frequented these places for many years in a whaling vessel, to be the work of the *Kakapo*.

“Their flesh is white, and is generally esteemed good eating.”

I have also been kindly favoured with the following notes on this bird by His Excellency Sir George Grey.

“The *Strigops* is called *Kaka-po* or Night Kaka by the aborigines of New Zealand, from the nocturnal habits of the bird. During the day it remains hid in holes under the roots of trees or rocks; or, very rarely, perched on the boughs of trees with a very dense thick foliage: at these times it appears stupid from its profound sleep, and if disturbed or taken from its hole immediately runs and tries to hide itself again, delighting, if practicable, to cover itself in a heap of soft dry grass; about sunset it becomes lively, animated, and playful, issues forth from its retreat and feeds on grass, weeds, vegetables, fruits, seeds, and roots: when eating grass it rather grazes than feeds, nibbling the grass in the manner of a rabbit or wombat. It sometimes climbs trees, but generally remains upon the ground, and only uses its short wings for the purpose of aiding its progress when running, balancing itself when on a tree or in making a short descent, half-jump,

half-flight from a higher to a lower bough. When feeding, if pleased with its food, it makes a continued grunting noise: it is a greedy bird and choice in its food, showing an evident relish for anything of which it is fond. It cries repeatedly during the night with a noise not very unlike that of the Kaka, but not so loud.

“ The *Kakapo* is a very clever and intelligent bird, in fact singularly so; contracts a strong affection for those who are kind to it, shows its attachment by climbing about and rubbing itself against its friend, and is eminently a social and playful bird; indeed, were it not for its dirty habits, it makes a far better pet than any other bird with which I am acquainted; for its manner of showing its attachment, by playfulness and fondling, is more like that of a dog than a bird.

“ It builds in holes under trees and rocks, and lays two or three white eggs, about the size of a Pullet's, in the month of February; and the young birds are found in March.

“ At present, 1854, the bird is known to exist only in the middle island of New Zealand, on the west coast, between Chalky Harbour and Jackson's Bay, and in the northern island about the sources of the Whangarie, and in part of the Taufa countries. It was, within the recollection of the old people, abundant in every part of New Zealand, and they say that it has been exterminated by the cats introduced by Europeans, which are now found wild and in great numbers in every part of the country; they say also that the large rat, introduced from Europe, has done its part in the work of destruction.

“ The natives assert, that when the breeding-season is over the *Kakapo* lives in societies of five or six in the same hole; and they also state that it is a provident bird, and lays up in the fine season a store of fern-root for the bad weather. I have had five or six of these birds in captivity, but never succeeded in keeping them alive for more than eighteen months or two years. The last I had I sent home as a present to

the Zoological Society, but I am informed it died off Cape Horn."

Since the above was published, Mr. Julius Haast, of Canterbury, New Zealand, has published some notes on this species in the 'Verhandlungen' of the Zoological and Botanical Association of Vienna, of October 10th, 1863, a translation of which is given in the 'Ibis' for 1864, p. 340, from which the following are extracts:—

"The principal resorts of the *Kakapo* are the grass-plots in the open and mossy beech-woods near mountain streams, and rocky declivities, beneath large moss-covered stones overgrown by beech-roots; also the mossy banks of the larger rivers which are occasionally flooded by a sudden thaw or heavy rains. It is remarkable that it is never found on the eastern side of the Alps, though extensive beech-forests occur there also: the only part excepted is the valley of the Makavora Kiver, which forms the Wanaka Lake. It appears, therefore, to be confined to the western slope of the principal mountain-chain, and only to pass over the low and wooded defile that leads from the sources of the Haast River to those of the Makavora. Even here, however, it is not found beyond the mouth of the river near the Wanaka Lake, as lower down there are no forests. The *Kakapo* is very frequently met with in the valley of the last-named river and in the Makavora forest. In the Wilkin Valley it is less numerous, and in the Hunter Valley it is not to be met with. Until now it has been supposed to be a night bird, but my observations convince me that this is not always the case. It is true that its call is mostly heard about an hour after sunset, at which time it commences to roam about where the thick foliage creates a kind of artificial darkness, but I have several times met with it in the daytime. On one occasion as soon as the bird saw me it threw itself off the tree as if it were shot and escaped under some large fragments of rock, without opening its wings or using them in any way to break its fall. It is

strange that a bird with well-formed wings should prefer to use its feet as a means of locomotion, especially when the feet seem rather formed, from the position of the toes, for climbing than for walking or for running. To ascertain whether the Kakapo would not fly, or at least flutter when pursued, I had a large specimen which had been captured by my dog without being injured, brought to an open place where there was sufficient space to open its wings while running ; but instead of attempting so to do the bird ran towards the nearest thicket, moving much like a fowl with a celerity that, considering the position of its toes and its unwieldy form, greatly surprised me. Viewed sideways the wings appeared to be closely pressed to the body, but from behind they were observed to be slightly open, more apparently for the purpose of preserving a right balance than to aid it in running. Though the body does not seem formed for much locomotion it roams to considerable distances sometimes. On one occasion we found the impression of its feet in sand more than half a mile from the river's bank. The crops of those we examined were generally filled with enormous quantities of minutely divided moss ; they were greatly distended, and sometimes so heavy that a single one weighed several ounces. Two specimens had eaten the berries of a species of *Coriaria*, which had given a peculiar smell to their flesh. A peculiarity resulting from this vegetable diet is that the bird instead of having, like others, an oily soft kind of fat under the skin, possesses a great quantity of firm and white fat. Its flesh is better and more substantial than that of any other species of Parrot and of exquisite flavour I expected to find the Kakapo in well-excavated caves, with entrances which would only permit the inhabitant to enter ; but I found, with a single exception, that the habitations consisted of clefts or fissures in rocks, holes between the roots of decayed trees, or natural openings between fragments of rock, where my large dog easily entered, and generally returned, head foremost, carrying his prey in his

mouth. The Maories told me the Kakapo was a very valiant bird, and often fought successfully with their dogs; but my dog, though punished at times, never had a serious battle with one of them. It has been said that the Kakapo lives in flocks, but I have never found more than one bird in a hole, though very frequently I have observed a second hole about thirty or forty yards distant, the bird in which was generally of a different sex from the first. It appears to me, therefore, that the birds live singly, but at night go together in pairs for the double purpose of feeding and reproduction. When the female roams about with her young she utters a peculiar call, more resembling the grunting of a pig than anything else.

“In former years the Marnia plains were a celebrated hunting-ground of the Maories for this bird. They generally went there on fine moonlight nights when the berries of the Tertu (*Coriaria sarmentosa*), a favourite food of the bird, were ripe, and ran them down partly with dogs, or even killed them with long sticks upon the Tertu bushes. Another mode was when they had found their holes to introduce a long stick to which they had fastened several strong flax snares; feeling the bird with the end of it, they twisted the stick until some part of the bird was caught in the snares, and thus drew it out. The cry of the Kakapo, heard during the night, very much resembles the gobble of the Turkey.”

The following is Mr. G. R. Gray's description of this remarkable species:—

“Upper surface sap-green, with a verdigris tinge on the wings; each feather marked in the middle with yellow, which is margined on the sides with black, from which spring irregular transverse bands of the same colour; the outer webs of the greater wing-coverts, quills, secondaries, and entire tail brownish buff, irregularly banded transversely with black; between every alternate set lemon-yellow; the inner webs of quills and secondaries black, more or less transversely banded

with lemon-yellow ; under surface pale greenish yellow, tinged with lemon-yellow, more or less marked along the shaft with pale yellow, which is narrowly margined with brownish black ; some of the feathers have transverse bands of the same colour ; the top of the head brownish black, margined outerly with sap-green, tinged in some places with verdigris, and marked in the middle with pale yellow ; the front cheeks, ear-coverts, and the projecting feathers of the face pale umber, marked in the middle with yellowish white ; bill white ; feet plumbeous-black.

Total length 2 feet 4 inches ; bill 1 inch 8 lines ; wings $11\frac{1}{2}$; tail $9\frac{1}{4}$; tarsi $1\frac{3}{4}$.

Genus NESTOR, *Wagler*.

Proposed for the *Psittacus hypopolius*, the only species of the form then known, but of which three others have since been discovered.

Sp. 13. NESTOR HYPOPOLIUS.

KA-KA PARROT.

Psittacus hypopolius, Forst. Draw., No. 50.

—— *meridionalis*, Gmel. Edit. Linn. Syst. Nat., tom. i. p. 333.

—— *nestor*, Lath. Ind. Orn., vol. i. p. 110.

—— *australis*, Shaw, Mus. Lever., pl. at p. 87.

—— (*Kakadoe*) *nestor*, Kuhl, Consp. Psitt. in Nov. Act. pp. 12, 86.

Nestor hypopolius, Wagl. Mon. Psitt. in Abhand. &c., pp. 505, 696.

Southern Brown Parrot, Lath. Gen. Syn., vol. i. p. 264.

Nestor novæ-zelandiæ, Less. Traité d'Orn., p. 191.

Centrourus australis, Swains. Class. of Birds, vol. ii. p. 303.

Ka-ka, Natives of New Zealand.

Nestor hypopolius, Gould, *Birds of Australia*, fol., Supplement, pl.

Although New Zealand has been known to us since the days of our celebrated voyager Captain Cook, and been a British possession for so many years, but little has been recorded respecting the habits and economy of this species of

Parrot. Had an opportunity offered for my visiting New Zealand, this void in the history of one of the most interesting of the great group of Parrots should certainly have been filled up; and I would call the attention of the residents of New Zealand to the subject, in the hope that some of them will study and record the habits and economy of the bird before it be extirpated, and its name and a few stuffed skins alone left as an evidence of its once having existed.

In his 'Notes on the Birds of New Zealand,' a translation of which will be found in the 'Ibis' for 1862, Dr. Julius Haast says:—"The noisy Kaka plays a conspicuous *rôle* in the forest. It is a gregarious bird, perching generally on the highest trees; but, as soon as the assembled flock hear a noise unknown to them, they approach and amuse the traveller by their various quarrelsome notes and shrieks. If in shooting at them one only be wounded so that it may be secured, it is an easy matter to shoot one after the other, as they always come back when they hear the cry of a wounded companion." If surprised by a dog the Kaka becomes "a respectable opponent, for with outstretched wings he throws himself on his back, and defends himself stoutly with bill and claws."

A very great dissimilarity both in size and colouring occurs in different examples of this species, so much so as to induce a belief, both in my own mind and in that of others, that they may constitute two species. Some of the specimens have the whole of the crown and back of the neck and the outer portion of the wings bluish grey; others appear to be real Nestors, having very hoary heads; some have very distinct collars of beautiful fringed feathers at the back of the neck, while in others this feature is more feebly developed. It will be a question for the colonists to determine if there be more than a single species, or if the differences seen in the skins sent to Europe are indications only of local varieties, and to what cause they may be due.

Crown of the head and nape hoary, slightly tinged with green, and with a narrow edging of brown to each feather; ear-coverts striated with dull orange and brown; feathers at the checks and front of the throat hoary, bordered with brown, and washed with red at the base of the bill; all the upper surface olive-brown, each feather margined with dark brown, and the feathers of the neck tipped with three semi-circles of orange-brown and orange; wings and tail olive, becoming paler on the margins and tip; under wing-coverts scarlet, crossed by narrow bands of black; primaries and secondaries deeply toothed on their internal webs with light salmon-colour, those of the tail with deep reddish salmon-colour; feathers of the breast olive, with a narrow crescent of brown near the tip, beyond which is a second of dark reddish orange; lower part of the back, upper tail-coverts, abdomen, and under tail-coverts olive, largely tipped with deep rich red, within which, near the end, is a narrow crescent of brown; bill horny; feet mealy brown.

Sp. 14. **NESTOR PRODUCTUS**, *Gould*.

PHILLIP ISLAND PARROT.

Wilson's Parrakeet, Lath. Gen. Hist., vol. ii. p. 170?

Long-billed Parrakeet. Ib., p. 171?

Plyctolophus productus, Gould in Proc. of Zool. Soc., part iv. p. 19.

Nestor productus, Gould, *Birds of Australia*, fol., vol. v. pl. 6.

I regret to state that the native haunts of this fine bird have been so intruded upon, and such a war of extermination been carried on against it, that it is now entirely extirpated, and a few stuffed specimens are the only mementos of its having existed. Until lately it still lived on Philip Island (an islet lying off Norfolk Island), but in this small domain it is no longer to be found.

During my stay at Sydney I had an opportunity of seeing a living example in the possession of Major Anderson, and

was much interested with many of its actions, which were so different from those of every other member of its family, that I felt convinced they were equally different and curious in a state of nature. This bird was not confined to a cage, but permitted to range over the house, along the floors of which it passed, not with the awkward waddling gait of a Parrot but in a succession of leaps, precisely after the manner of the *Corvidæ*. Mrs. Anderson, to whom I am indebted for the little I could learn respecting it, informed me that it was found among the rocks and upon the loftiest trees of Philip Island, that it was so tame as to be readily taken alive with a noose, and that it fed upon the blossoms of the white-wood tree, or white *Hibiscus*, sucking the honey of the flowers: the mention of this latter circumstance induced me to examine the tongue of the bird, which presented a very peculiar structure, not, like that of the true honey-feeding Parrakeets (the *Trichoglossi*), furnished with a brush-like termination, but with a narrow horny scoop on the under side, which, together with the extremity of the tongue, resembled the end of a finger with the nail beneath instead of above: this peculiarity in the structure of the organ is doubtless indicative of a corresponding peculiarity in the nature of the food upon which the bird subsists. Mrs. Anderson told me that it lays four eggs in the hollow part of a tree, but beyond this I was unable to ascertain anything respecting its nidification. I may mention that I once saw a living example of the bird in England. It was in the possession of Sir. J. P. Millbank, Bart., who informed me that it evinced a strong partiality to the leaves of the common lettuce and other soft vegetables, and that it was also very fond of the juice of fruits, of cream and butter.

It would appear from the numerous specimens I have examined that the sexes scarcely differ from each other in colour; the young, on the contrary, have but little of the rich yellow and red markings of the breast, that part being olive-brown like the back.

The general colour of the upper surface brown ; head and back of the neck tinged with grey, the feathers of these parts as well as of the back margined with a deeper tint ; rump, belly, and under tail-coverts deep red ; cheeks, throat, and chest yellow, the former tinged with red ; shoulders on their inner surface yellow tinged with rufous olive ; tail-feathers banded at the base with orange-yellow and brown ; the inner webs of the quill-feathers at the base and beneath, with dusky red and brown ; irides very dark brown ; bill brown ; nostrils, bare skin round the eye, and feet dark olive-brown.

Sp. 15. NESTOR ESSLINGII, *De Souancé*.

PRINCE OF ESSLING'S PARROT.

Nestor esslingii, De Souancé, Rev. et Mag. de Zool. 1856, p. 223.

—— *novæ-zelandiæ*, Bonap. Rev. et Mag. de Zool. 1854, p. 155.

Nestor esslingii, Gould, *Birds of Australia*, fol., Supplement pl.

A single specimen only of this magnificent Parrot has come under my notice ; and this example is perhaps the only one that has yet been sent to Europe. It formerly formed part of the collection of the Prince D'Essling of Paris, but now graces the National Museum of Great Britain. It is in a most perfect state of preservation, and is, without exception, one of the finest species, not only of its genus, but of the great family of Parrots. The native country of this bird is supposed to be New Zealand ; but I, as well as M. de Souancé, have failed to learn anything definite on this point. In size it even exceeds the great Ka-ka (*Nestor hypopolius*), which it resembles in the form of its beak, while in its general colouring it closely assimilates to the *N. productus* ; in some features of its plumage, however, it differs from both. In both those species the tail-feathers are strongly toothed on the under surface with red ; in the *N. esslingii* no such marks occur, the tothing on the inner webs of the primaries is not so clear and well de-

finer, and the light-coloured interspaces are more freckled with brown.

I need scarcely remark how interesting additional examples of any of these rare Parrots would be to our collections, especially of the present species; second only to which would be a knowledge of the country it inhabits.

The following is M. de Souancé's account of this bird, which, as he is the original describer of this species, is given in his own words:—

“NESTOR ESSLINGII, nob. Le Nestor dont nous allons donner la description est, sans contredit, l'oiseau le plus remarquable de la collection Masséna. Intermédiaire entre le *N. hypopolius* et le *N. productus*, ce magnifique Perroquet réunit, dans son plumage, des détails caractéristiques de ces deux espèces.

“Coloration générale semblable à celle du *N. hypopolius*: tout le dessus de la tête gris blanchâtre, les plumes auriculaires jaune orangé très-vif, les joues rouge orangé; les plumes de la poitrine gris cendré, mais largement bordées de brun; une large ceinture d'un blanc jaunâtre règne sur le milieu du ventre; le bas-ventre, les cuisses et les couvertures de la queue rouge brun; bec et pieds de couleur sombre. L. T. 50 cent.; aile 30 cent. Nouvelle-Zélande? Un autre individu, jeune, ressemble tout-à-fait au jeune de l'espèce ordinaire, mais il offre quelques plumes blanches sur l'abdomen, ce qui indique clairement qu'il appartient à cette espèce.

“En comparant cette espèce avec ses deux congénères plus anciennement connus, nous voyons qu'il diffère du *N. hypopolius*, dont, au reste, il est fort voisin, par la coloration plus vive de ses joues et par sa ceinture blanche. Nous signalerons dans le *N. productus*, un fait analogue à celui que nous avons déjà remarqué dans les *Loriculus philippensis*, *L. Regulus*, *L. Bonaparti*; c'est-à-dire, le prolongement excessif de la mandibule supérieure, qui rappelle ce que l'on voit parmi les espèces américaines, chez l'*Enicognathus leptorhynchus*, et

pour les Cacatoes, dans le genre *Licmetis*. Ici rien de pareil n'a lieu : le bec entièrement semblable à celui du *N. hypopolius*. M. Gould, dans ses 'Oiseaux de l'Australie,' figure un jeune *N. productus*, qui par sa poitrine grise semblerait avoir quelques rapports avec cette espèce et qui s'en éloigne beaucoup cependant par sa tête brune et la forme de son bec. Nous caractérisons donc les trois espèces de *Nestor* de la manière suivante :—1° *N. hypopolius*. Bec grand et fort ; dessus de la tête blanc grisâtre ; plumes auriculaires et joues faiblement nuancées de jaune et de rouge. 2° *N. Esslingii*. Bec grand et fort ; sommet de la tête blanc grisâtre ; plumes auriculaires et joues très vivement colorées de jaune et de rouge orangé ; poitrine gris brun, une large ceinture blanc jaunâtre sur l'abdomen. 3° *N. productus*. Bec très-allongé et grêle ; sommet de la tête brun ; les joues d'un jaune nuancé de rouge ; la gorge, la poitrine et les couvertures inférieures des ailes jaune pâle. Le jeune a la poitrine brune."

To this list M. de Souancé would doubtless have added my *Nestor notabilis* had he been aware of its existence.

Sp. 16. NESTOR NOTABILIS, *Gould*.

KEA PARROT.

Nestor notabilis, Gould in Proc. of Zool. Soc., part xxiv. p. 94.

Nestor notabilis, Gould, *Birds of Australia*, fol., Supplement, pl.

It must be remembered that we are indebted to Mr. Walter Mantell for the acquisition of a recent specimen of the *Notornis* : and second only in importance to this extraordinary and almost extinct bird, is the present remarkable species of Parrot, a bird equally rare as the *Notornis*, and apparently equally as near its extinction. When writing on any of the birds of the New Zealand and adjacent group of islands, it soon becomes evident that we are dealing with the few remaining members of an extremely ancient fauna, the remnants, in fact, of genera and species which in the lapse of a few years will be entirely

effaced from the surface of our globe. The Philip Island Parrot (*Nestor productus*) is already gone ; and the Kaka (*Nestor hypopolius*) must soon follow, but not so soon, probably, as the present bird. With what care, then, should such relics be preserved in our museums ; to none but hermetically sealed cases should they be consigned. Let it be remembered how great are our regrets that the evidence of the former existence of the Dodo comprises only a single foot and head and a few dried bones.

As I have nothing to add to the few remarks respecting the history of the present bird accompanying my original description in the 'Proceedings of the Zoological Society,' I cannot do better than transcribe them here :—

“ The *Nestor notabilis*, which is called “ *Keá* ” by the natives, differs from its near allies *N. hypopolius* and *N. productus* in the greater uniformity of its colouring, in the yellow-toothed markings of the inner webs of the primaries and secondaries, and in the orange toothed markings of the inner webs of the tail-feathers ; and in the yellow colouring of the under mandible.

“ Mr. Mantell informed me that he first heard of the existence of the *Keá* about eight years ago, from some old natives whom he was questioning as to the birds of the Middle Island. They said the *Keá* somewhat resembled the *Káka* (*Nestor hypopolius*), but that, unlike that bird, it was green ; and added that it used formerly to come to the coast in severe winters, but that they had not seen it lately. Mr. Mantell only obtained two specimens of this fine bird : they were shot in the Murihiku country ; and for one of them he was indebted to Mr. John Lemon of Murihiku.

“ General hue olive-green ; each feather tipped in a crescentic form with brown, and having a fine line of the same colour down the shaft ; feathers of the lower part of the back and the upper tail-coverts washed near the tip with fiery orange-red ; primaries brown, margined at the base with

greenish blue; tail dull green; inner webs of the lateral feathers brown, toothed on their basal two-thirds with orange-yellow; all the tail-feathers crossed near the extremity with an indistinct band of brown, and tipped with olive-brown; feathers of the axillæ fine scarlet; under wing-coverts scarlet tipped with brown, the greater ones banded with brown and with yellow stained with scarlet; basal portion of the primaries and secondaries largely toothed with fine yellow, which is not perceptible on the upper surface unless the wings are very widely spread; upper mandible dark horn-colour; under mandible yellow, becoming richer towards the point; feet nearly yellowish olive.

“ Total length 18 inches; bill $2\frac{1}{2}$; wing $12\frac{1}{2}$; tail $7\frac{1}{2}$; tarsi $1\frac{5}{8}$.

“ *Habitat.* The Middle Island, New Zealand.”

Family COLUMBIDÆ.

Genus DIDUNCULUS, *Peale*.

Of this extraordinary form only one species has yet been discovered; and in all probability it will ever stand alone.

Sp. 17. DIDUNCULUS STRIGIROSTRIS.

DIDUNCULUS.

Didunculus, Peale.

Gauthodon strigirostris, Jard. in Ann. and Mag. of Nat. Hist., vol. xvi. p. 175. pl. 9.

Gnathodon strigirostris, Gould, Birds of Australia, fol., vol. v. pl. 76.

The researches of modern zoologists have not perhaps brought to light a more curious object than the *Didunculus*, the first description of which was published by Sir William Jardine in the ‘Annals and Magazine of Natural History,’ above referred to, wherein he states that “we are indebted to

Lady Harvey, who purchased it at a sale in Edinburgh, and whose extensive collection of natural history in that city is always open when science can be promoted, for a specimen of this remarkable bird ;” and adds “ we are aware of no existing description, though there is one allusion made to a bird which may eventually turn out to be this. In Mr. Strickland’s Report on the Recent Progress and Present State of Ornithology, read before the British Association at York, it is stated, “ The recent American voyage of discovery will extend our knowledge of Polynesian zoology, and its researches will be made known by Mr. Titian Peale, who is said to have discovered among the rarities a new bird allied to the Dodo, which he proposes to name ‘*Didunculus* ;’ and we believe ‘*strigirostris*’ has been applied specifically.”

In this state the subject remained until the year 1862, when Dr. Bennett communicated some observations on this rare bird to the ‘ Sydney Morning Herald ’ of August the 19th and September the 3rd. This latter communication was subsequently read at a Meeting of the Zoological Society of London and published in their ‘ Proceedings.’ The following are its principal features.

“ The Rev. John B. Stair, of Broadmeadows, Victoria,” says Dr. Bennett, “ who was formerly resident for some time at the Samoan or Navigator group of Islands, which are believed to be the exclusive habitat of this singular bird, informed the Secretary of the Acclimatization Society of Victoria that it is named by the natives ‘ Manu-mea ’ or Red-bird, from the most predominant colour of its plumage being chocolate-red. It was formerly numerous, and we may therefore be surprised that it should not have been seen and procured by the early navigators ; now it is nearly extinct. It feeds on plantains, and is partial to the fruit of the ‘ Soi,’ a species of *Dioscorea* or yam, a twining plant abundant in the islands, and producing a fruit resembling a small potato. In disposition it is exceedingly shy and timid. Like the Ground-Pigeons it

roosts on bushes or stumps of trees, and feeds on the ground. It also builds its nest in such situations. During the breeding-season both parents aid in the duty of incubation, relieve each other with great regularity, and are so intent on the performance of their duty that, when sitting on their eggs, they may be easily captured by the hand. Two living birds were obtained in this way by Mr. Stair. They are also taken by the natives with birdlime or springes, and shot with arrows, the sportsman concealing himself near an open space in which a quantity of the 'soi,' their favourite food, has been placed.

"The first living bird obtained was accidentally killed; the second, when placed in confinement, at first was sullen and refused food, but soon became reconciled to captivity and thrived well. The natives fed it upon boiled taro (the root of the *Caladium esculentum*), rolled into oblong pellets, in the same manner as they fed their pet Wood-Pigeons and Doves. The power of wing of most of the Pigeon tribe is very great, and it also obtains in this bird. It flies through the air with a loud noise like the Topknot Pigeon (*Lopholaimus antarcticus*) of the Illawarra district, and many others of the Australian Pigeons; and Mr. Stair describes it as making so great a noise with its wings on rising that, when heard at a distance, it resembles the rumbling of distant thunder, for which it might be mistaken. Mr. Stair considers that the bird may yet be found at Savaii, the largest and most mountainous island of the group, but thinks it does not at present exist on that of Upolu."

In a communication to the Zoological Society of London, read at their Meeting on November the 10th, 1863, Dr. Bennett stated that he had recently had an opportunity of examining a living example which had been brought to Sidney by Mr. J. Williams. "At first it was rather shy and wild, but afterwards became more tame, and manifested but little fear. This feeling was, however, occasionally exhibited by uttering some rapid 'coos,' and by fluttering its wings. It is a stupid

looking bird, and has no particular attraction except in the anomalous and extraordinary form of the beak, which cannot fail to excite the attention of the most ordinary observers. The only sound it utters is a quick ‘Coo-coo-coo,’ the beak being always a little open when the notes are emitted. The bird was captured about five miles from Apia, in the Island of Upolu; it is evident, therefore, that a few still remain there. It is, however, agreed by every one with whom I have conversed, that has resided at the Navigators’ Islands, that it is nearly extinct, both from being eaten by the natives as well as by cats, rats, and other vermin. Its food consisted at first of boiled yams, but it will eat bananas, apples, bread, and boiled potatoes.”

Another paper, by Dr. Bennett, on this extraordinary bird, was read at the Meeting of the Society on the 22nd of March 1864, in which he says:—“In the contour of the bill, the form and position of the nostrils, and several other characters, the *Didunculus* differs from any other living species yet known. Although a smaller bird in size, it approximates the nearest in all its characters to the extinct Dodo, and, like it, combines the characters of a rapacious bird with that of the harmless Pigeon. Although the mandibles are powerful in structure, yet the beak is never used as an offensive weapon; for, when the hand is placed in the cage, or the bird is seized for removal from one cage to another, it never attempts to bite; but, on the contrary, is so timid that, after fluttering about or running into a dark corner, it soon becomes subdued and is easily taken.” Speaking of another living pair he had recently purchased, Dr. Bennett says:—“They would nibble into minute bits the seeds of loquats, almonds, and hemp-seed, with the same action as the Parrot tribe when feeding. When I first had them, boiled potatoes and bread formed their diet; the former being soft were torn and swallowed in large pieces, but the latter they placed under their feet and tore with their hooked beak into small bits. It was supposed that the bird

never drinks water, but this I soon found to be incorrect. They invariably feed in the light, but will not take food if anyone be present. They run with great rapidity, elongating the body and depressing the head, and in the action of running resemble Grouse."

Another living *Didunculus* having arrived in Sydney, Dr. Bennett, with his wonted liberality, purchased it at a very high price, and sent it to London, as a present to the Zoological Society, in charge of Mr. Broughton, the steward of the 'La Hogue,' whose experience in the management of birds enabled him to bring it home in safety, and it lived for some months in the Society's Gardens, in the Regent's Park, an object of interest to all scientific ornithologists; its skin is now in the National collection at the British Museum, and its body will afford Mr. Parker the opportunity of preparing and publishing a valuable memoir on its osteology. Referring to this specimen, Dr. Bennett states that the whole of the time it was in his "possession it never became domesticated, nor evinced the slightest attachment to the lady who daily fed it; it was the same to her as to strangers, and I do not consider the *Didunculus* a bird which will be readily reconciled to captivity. For some time it would be comparatively tame, and then, without any apparent cause to account for the change, become very wild."

Lores and a small patch on each side of the throat bare and apparently red; head, neck, breast, and belly glossy greenish black; feathers of the upper part of the back black, with a crescent-shaped mark of glossy green at the tip of each feather; back, wings, tail, and under tail-coverts rich deep chestnut-red; primaries and secondaries greyish black; irides dark reddish brown; orbits flesh-colour; bill orange, red at the base, the remainder yellowish; tarsi and feet bright orange-red.

Family STRUTHIONIDÆ.

Sp. 18. CASUARIUS BENNETTI, *Gould*.

MOORUK.

Casuarus bennetti, Gould in Proc. of Zool. Soc., part xxv. p. 269, pl. 129.

Mooruk, Aborigines of New Britain.

Casuarus bennetti, Gould, *Birds of Australia*, fol., Supplement, pl.

Who would have supposed the former existence of an extensive group of Struthious birds of great magnitude and comprising many species? and what naturalist would have imagined that so much of the bony structures of these birds would have been brought to light—that not only their generic but their specific characters may be accurately described, and even their entire skeletons mounted in our museums? Yet these things have been realized within the last few years, the indefatigable zeal and careful study of Professor Owen having enabled him to determine and arrange the semi-fossilized remains of numerous species of a great family of birds which formerly existed on our globe, and of which some few remain to testify as to the character of their plumage and their economy of life. The *Casuarus bennetti* is one of the few living representatives of this almost extinct group, and its discovery must be hailed with interest, tending as it does to throw a light on the history of those huge birds of remote antiquity—the *Dinornis* and its allies. Professor Owen considers this new bird and the Cassowary (*Casuarus galeatus*) to be the most nearly allied living types of his genus *Palapteryx*; and if this opinion be correct, we may infer that the habits and economy, as well as the kind of plumage and the character of country inhabited by the extinct birds, were very similar. The Mooruk lives reclusely in the gullies and humid parts of dense forests, feeding upon the roots of ferns and plants pe-

culiar to such situations. The hair-like character of its feathers bespeak these habits and mode of life, as much as the plumes of the Ostriches and Rheas do their adaptation for open plains and savannahs.

Compared with the Cassowary, the Mooruk is a smaller and shorter bird, and has much thicker legs; and the helmet, instead of being in the form of an elevated casque with a short rounded ridge, rises high at the base, and then branches out into two overhanging lobes, the horny part which unites them being lowest in the centre—the back part of this elevated double crest being flat and rising rather obliquely from the head near the occiput. The colouring of the Mooruk, when it first arrived in England, was rufous mixed with black on the back and under part of the body, and raven-black about the neck and breast; the loose wavy skin of the neck was beautifully coloured with iridescent tints of bluish purple, pink, and an occasional shade of green; and the feet and legs were of a pale ash-colour. The body has now become generally darker, the bare skin of the fore part of the neck of a more uniform smalt blue, and the legs of a somewhat darker tint.

Dr. Bennett, after whom I have named the bird as a just compliment to one who has ever manifested the greatest love for Natural History, besides presenting the living birds to the Zoological Society, has enriched the volumes of their 'Proceedings' with some interesting details as to the habits of the bird while living in his possession at Sydney—some in the form of letters to myself, others as direct communications; and these I have great pleasure in reproducing here:—

The Mooruk was obtained at a native village under two hills, named by navigators the Mother and Daughter, on that part of the coast of New Britain lying between Cape Palliser and Cape Stephen.

“The feet and legs, which are very large and strong, are of a pale ash-colour, and exhibit a remarkable peculiarity in

the extreme length of the claw of the inner toe on each foot, it being nearly three times the length which obtains in the claws of the other toes. This bird, which is immature, differs from the *Casuarus galeatus* in having a horny plate instead of a helmet-like protuberance on the top of the head, which callous plate has the character of, and resembles, mother-of-pearl darkened with black lead: the form of the bill differs considerably from that of the Emu (*Dromaius Novæ-Hollandiæ*), being narrower, longer, and more curved, and having a black and leathery cere at the base; behind the plate of the head is a small tuft of black hair-like feathers, which are continued in greater or lesser abundance over most parts of the neck."

In Dr. Bennett's next communication, direct to the Society, he says:—

"On the 26th of October, 1858, the 'Oberon' cutter of forty-eight tons arrived in Sydney, having two fine young specimens of the 'Mooruk' on board, stated to be male and female. Captain Devlin informed me he had had them eight months, that he procured them soon after his arrival at New Britain, and since that time had been trading about the islands. They were about half the size of the specimens sent to England last year. He also told me that the natives capture them when very young, and rear them by hand. The old birds are very swift of foot, and possess great strength in the legs; on the least alarm they elevate the head, and, seeing danger, dart among the thick bush, thread about in localities where no human being could follow them, and disappear like magic. Their powers of leaping are very extraordinary. It was from this circumstance the first bird brought from New Britain was lost: from its habit of leaping it one day made a spring on the deck and went overboard; it was blowing a strong breeze at the time, and the bird perished. I succeeded in purchasing these birds; and Captain Slater, the present commander of the 'Oberon,' brought

them to my house in a cab ; and when placed in the yard they walked about as tame as turkeys. They approached anyone that came into the yard, pecking the hand as if desirous of being fed, and were very docile. They began by pecking at a bone in the yard, probably not having tasted any meat for some time, and would not, while engaged upon it, touch some boiled potatoes which were thrown to them ; indeed we found afterwards they fed better out of a dish than from the ground—no doubt, having been accustomed early to be fed in that manner. They were as familiar as if born and bred among us for years, and did not require time to reconcile them to their new situation, but became sociable and quite at home at once. We found them next day rather too tame, or, like spoilt pets, too often in the way. One or both of them would walk into the kitchen ; while one was dodging under the tables and chairs, the other would leap upon the table, keeping the cook in a state of excitement ; or they would be heard chirping in the hall, or walk into the library in search of food or information, or walk up stairs, and then be quickly seen descending again, making their peculiar chirping, whistling noise : not a door could be left open, but in they walked, familiar with all. They kept the servants constantly on the alert : if one of them went to open the door, on turning round she found a ‘ Mooruk ’ behind her ; for they seldom went together, generally wandering apart from each other. If any attempt was made to turn them out by force, they would dart rapidly round the room, dodging about under the tables, chairs, and sofas, and then end by squatting down under a sofa or in a corner ; and it was impossible to remove the bird except by carrying it away : on attempting this, the long, powerful, muscular legs, would begin kicking and struggling, and soon get released, when it would politely walk out of its own accord. I found the best method was to entice them out, as if you had something eatable in the hand, when they would follow the direction in which you wished to lead

them. The housemaid attempting to turn the bird out of one of the rooms, it gave her a kick and tore her dress. They walked into the stable among the horses, poking their bills into the manger. When writing in my study, a chirping whistling noise is heard; the door, which is ajar, is pushed open, and in walk the 'Mooruks,' who quietly pace round the room, inspecting everything, and then as peaceably go out again. If any attempt is made to turn them out, they leap, dart about, and exhibit a wonderful rapidity of movement, which no one would suppose possible from their quiet gait and manner at other times. Even in the very tame state of these birds, I have seen sufficient of them to know that, if they were loose in a wood, it would be impossible to catch them, and almost as difficult to shoot them. One day, when apparently frightened at something that occurred, I saw one of them scour round the yard at a swift pace, and speedily disappear under the archway so rapidly that the eye could hardly follow it, upsetting all the poultry in its progress that could not get out of the way. The lower half of the stable-door, about four feet high, was kept shut, to prevent them going in; but this proved no obstacle, as it was easily leaped over by these birds. They never appeared to take any notice of, or be frightened at, the Jabiru or Gigantic Crane, which was in the same yard, although that sedate, stately bird was not pleased at their intrusion. One day I remarked the Jabiru spreading his long wings, and clattering his beak, opposite one of the 'Mooruks,' as if in ridicule of their wingless condition. 'Mooruk,' on the other hand, was preening its feathers, and spreading out its funny little apology for wings, as if proud of displaying the stiff horny shafts with which they were adorned. Captain Devlin says the natives consider them to a certain degree sacred, rear them as pets, and have great affection for them; he is not aware that they are used for food, but if so, not generally; indeed, their shy disposition and power of rapid running, darting through the brake and bush, would almost preclude their capture.

“The height of the largest or male of these young birds, to the top of the back, was two feet two inches, and of the female two feet. The height of the largest or male bird, when erect, to the top of the head, was three feet two inches, and of the female three feet.”

An egg presented to me by Dr. Bennett is five and a half inches long by three and a half inches broad; the ground-colour very pale buff, with the entire surface covered with pale green corrugations.

An egg laid in the Gardens of the Zoological Society is pale grass-green closely freckled with a paler colouring, and much smoother and more finely granulated than that of the Common Cassowary. It measures 6·0 by 3·45 inches, and weighed $22\frac{1}{2}$ oz. Its shape is more elongated and pyriform than that of the Cassowary or of the Emu.

“The pair of Mooruks,” says Dr. Sclater in his ‘Notes on the Incubation of Struthious Birds,’ “which we received from Australia in 1858 have last year, and again this year, bred in the Zoological Gardens. The male performs the duties of incubation, the female not interfering in the matter. Last year after an incubation which lasted seven weeks, a single young one was hatched on the 4th of September, but was unfortunately destroyed by rats the same day. This year the male commenced to sit on the 25th of April, on six eggs, and we hope to be more fortunate.”—*Proc. Zool. Soc.*, 1863, p. 234.

At a subsequent meeting Dr. Sclater reported that “on the 17th of June, after an incubation of fifty-two days, a single young bird was produced, which, however, was in a very weak state, and only lived about twelve hours. I may remark that this is the fourth year in which the female Mooruk has attempted to breed. In April 1860 three eggs were laid without intercourse with the male bird, and of course unfruitful. In 1861 four unproductive eggs were likewise deposited. In 1862, out of six eggs deposited, a fine and healthy bird was hatched on September the 4th, after seven weeks incuba-

tion, by the male bird. Unfortunately, however, as before mentioned, it was destroyed by rats the night after its birth.”
—*Proc. Zool. Soc.*, 1863, p. 518.

Family **APTERYGIDÆ.**

Of this strictly New Zealand family two or three species are now in existence, and others may yet be discovered.

Genus **APTERYX**, *Shaw.*

For our first knowledge of the existence of an *Apteryx* we are indebted to the late Dr. Shaw, to whom the specimen figured by him in the ‘Naturalists’ Miscellany’ was presented by Captain Barclay, of the ship ‘Providence,’ who brought it from New Zealand about 1812. Dr. Shaw’s figure was accompanied by a detailed drawing of the bill, foot, and rudimentary wing, of the natural size. After Dr. Shaw’s death, his at that time unique specimen passed into the possession of the late Earl of Derby, then Lord Stanley. His Lordship’s being a private collection, and no other specimen having been seen either on the continent or in England, the existence of the species was doubted by naturalists generally for upwards of twenty years. M. Temminck, it is true, placed it with hesitation in an order to which he gave the title of *Inertes*, comprehending the present bird and the Dodo; but other naturalists were inclined to deny its existence altogether. The history of the bird remained in this state until June 1833, when the late Mr. Yarrell published in the ‘Transactions of the Zoological Society’ an interesting paper, detailing all that had been previously made known respecting it, and fully established it among accredited species: this paper was accompanied by a figure from the original specimen then in the possession of the late Earl of Derby, but now forming part of his Lordship’s magnificent bequest to the Town of Liverpool.

Sp. 19. **APTERYX AUSTRALIS, *Shaw* ?****KIWI KIWI.***Apteryx australis*, Shaw, Nat. Misc., vol. xxiv. pls. 1057. 1058 ?*Apteryx*, Temm. Man. d'Orn., 2nd edit. Anal. p. cxiv. ?*Apterous Penguin*, Lath. Gen. Hist., vol. x. p. 394 ?*Dromiceius novæ-zelandiæ*, Less. Man. d'Orn., tom. ii. p. 210 ?*Kiwi-Kiwi*, Aborigines of New Zealand.***Apteryx australis*, Gould, Birds of Australia, fol., vol. vi. pl. 2.**

In the 'Proceedings of the Zoological Society of London' for the year 1850, Mr. Bartlett has recorded his opinion that two species of *Apteryx* have been confounded under the above specific name, and if this view be correct it is probable that the bird figured by me is the one he has named *A. mantelli*.

"In calling the attention of the Meeting," said Mr. Bartlett, "to the large collection of specimens of the genus *Apteryx* on the table, I beg to state that I have been led to make a careful examination of all the individuals I could find in the various collections in London and elsewhere in consequence of an *Apteryx* belonging to Dr. Mantell having been placed in my hands by that gentleman a few days since, which appeared to me to differ from all that I had before seen. As a careful comparison of this bird with the specimens above mentioned fully justified me in considering it as a distinct species, I was about to describe it as a new one; but most fortunately I heard that the original specimen, figured and described by Dr. Shaw, and to which he applied the name of *Apteryx australis*, was in the collection of the Earl of Derby at Knowsley. It is with much pleasure I acknowledge his Lordship's kindness in honouring me with the loan of the bird, which has enabled me to identify the large *Apteryx* belonging to Dr. Mantell as pertaining to this species, and also to determine most satisfactorily the distinctive characters of the common species, which is considerably smaller, and to

which the name of *Apteryx australis* has long been erroneously applied. This bird differs from the original *Apteryx australis* of Dr. Shaw in its smaller size, its darker and more rufous colour, its *longer tarsus which is scutulated in front*, its shorter toes and claws, which are dark horn-coloured, its smaller wings, which have much stronger and thicker quills, and also in having long straggling hairs on the face. I may, however, remark, that although individuals of this species differ much in size, depending probably on age, sex, &c., I have found no exception to the distinctive characters above given, I therefore propose the name of *Apteryx mantelli* for the smaller and more common species—a humble effort to commemorate the exertions of Walter Mantell, Esq., to whom we are indebted for so many valuable discoveries in the natural history of New Zealand.

“ I subjoin a short description of the two species, in order that they may be more readily recognized.

| <i>Apteryx australis.</i> | | <i>Apteryx mantelli.</i> | |
|---|---------|--|--------|
| Colour, pale greyish-brown, darkest on the back. | | Colour, dark rufous brown, darkest on the back. | |
| | inches. | | inches |
| Entire length | 30 | Entire length | 23 |
| Bill from forehead | 6 | Bill from forehead | 4 |
| Tarsus (reticulated) | 2½ | Tarsus (scutulated) | 2¾ |
| Middle toe and claw | 3½ | Middle toe and claw | 2½ |
| Wings with soft slender quills; face with short hairs. | | Middle claw longest, all the claws dark horn-colour. Wings with strong thick quills; face with long straggling hairs. | |

“ The entire length being taken from skins, I consider of little value; the entire length of a bird ought always to be taken before a bird is skinned.

“ In conclusion I would remark that the *Apteryx australis* belonging to Dr. Mantell was collected by his son in Dusky Bay, and I have been informed by Dr. Gray that the original bird described by Dr. Shaw was brought from the same

locality. As far as I am able to ascertain, all the specimens of *Apteryx mantelli* are from the North Islands.

“The favourite localities of this bird are those covered with extensive and dense beds of fern, among which it conceals itself, and, when hard pressed by dogs, the usual mode of chasing it, takes refuge in crevices of the rocks, hollow trees, and in the deep holes which it excavates in the ground, in the form of a chamber; in these latter situations it is said to construct its nest of dried fern and grasses, and to deposit its eggs, the number and colour of which have not been clearly ascertained.”

“While undisturbed,” says Mr. Short, in a letter to Mr. Yarrell, “the head is carried far back in the shoulders, with the bill pointing to the ground; but, when pursued, it runs with great swiftness, carrying the head elevated like the Ostrich. It is asserted to be almost exclusively nocturnal in its habits, and it is by torchlight that it is usually hunted by the natives, by whom it is sought after with the utmost avidity, the skins being highly prized for the dresses of the chiefs; indeed, so much are they valued, that the natives can rarely be induced to part with them. The feathers are also employed to construct artificial flies for the capture of fish, precisely after the European manner. When attacked it defends itself very vigorously, striking rapid and dangerous blows with its powerful feet and sharp spur; with which it is also said to beat the ground in order to disturb the worms upon which it feeds, seizing them with its bill the instant they make their appearance; it also probably feeds upon snails, insects, etc.”

“The Apteryx is so scarce a bird, even in New Zealand,” says Dr. Sclater, “that it can hardly be expected that we should be well acquainted with its mode of reproduction. His Excellency Sir George Grey has lately sent me an extract from a letter addressed to him by T. E. Manning, Esq., dated Hokianga, on the north-western coast of the Northern Island,

February the 2nd, 1863 :—‘ Several years ago, an old native, who had been a great Kiwi-hunter in the times when the Kiwi were plentiful, told me a strange tale about the manner in which the Kiwi hatches its eggs. I, of course, cannot vouch for the correctness of the story, but think it worth relating ; he said that the Kiwi did not sit, like other birds, *upon* the egg, but *under* it, first burying the egg in the ground to a considerable depth, and then digging a cave or nest under it by which about one third of the lower end was exposed, and so lying under the egg and in contact with the lower end, which came, as it were, through the roof of the nest or burrow. The appearance of the egg, which I propose to send, corroborated this statement, for two-thirds of its length (the small end) was perfectly clean and white, and about one-third (the large end) was very much discoloured and very greasy, evidently from contact with the body of the bird. The difference in the colour and condition of the ends of the egg was quite remarkable and well defined by a circular line passing round the egg.’

“ Mr. E. L. Layard has favoured me with the following information on the same subject, forwarded to him by Mr. Webster, also resident at Hokianga, which contains much more positive information.

“ Mr. Webster writes as follows :—‘ A fortnight ago a native, out shooting Pigeons, discovered a Kiwi’s egg protruding out of a small hole at the root of a Kauri-tree ; removing the egg, he put his arm, to the elbow, up the hole, and got hold of the parent-bird. Does it not appear to be a strange position for an egg to be in ?

“ ‘ An old native, who professes to know something about them, states that they lay but one egg at a time. The nest is merely a hole scraped out by the bird, and generally about the roots of a tree where the ground is dry ; the egg is covered with leaves and moss, the decomposition of which evolves heat sufficient to bring forth the young. The process takes

six weeks. When hatched, the mother, by instinct, is at hand to attend to her offspring.'

"Fortunately we are able to test these statements to a certain extent by the observations of the habits of the female *Apteryx mantelli* in our Gardens, which, although unmated, has for several years produced eggs. She laid her first egg on the 9th of June 1859; since which date she has laid nine others, generally producing one early in the year, and a second about three months after, making two in each year. She has more than once manifested a disposition to sit upon her egg, having been discovered, after its deposition, placed *above* it, just in such an attitude as would be assumed if this were the case, and resisting all attempts to move her from her position. It would appear probable, therefore,—

"1. That the *Apteryx* lays one egg only at a time.

"2. That this is deposited within a hollow tree, as recorded by Mr. Webster, and that the female incubates thereon.

"3. That the *Apteryx* breeds twice a year."

Should the bird I have figured in the folio edition prove to be *A. mantelli* and not *A. australis*, the following notes, by Dr. Hochstetter, will have reference to it.

"In the northern districts of the Northern Island this species appears to have become quite extinct. But in Houtourou, or Little Barrier Island, a small island situated in the Gulf of Hauraki, near Auckland, completely wooded, rising about 1000 feet above the sea-level, and only accessible when the sea is quite calm, it is said to be still tolerably common. In the inhabited portions of the southern districts of the Northern Island, also, it has become nearly extirpated by men, dogs, and wild cats, and is only to be found in the more inaccessible and less populous mountain-chains, that is, in the wooded mountains between Cape Palliser and East Cape.—*Nat. Hist. Rev.*, 1861, p. 506.

A most careful and elaborate paper "On the Anatomy of the *Apteryx*," by Professor Owen, will be found in the second

volume of the 'Transactions of the Zoological Society of London.'

It is said to be an inhabitant of all the islands of New Zealand, particularly the southern end of the middle island.

Face and throat greenish brown, all the remainder of the plumage consisting of long lanceolate hair-like feathers, of a chestnut-brown colour, margined on each side with blackish brown; on the lower part of the breast and belly the feathers are lighter than those of the upper surface, and become of a grey tint; bill yellowish horn-colour, its base beset with numerous long hairs; feet yellowish brown.

Sp. 20. *APTERYX OWENII*, *Gould*.

OWEN'S *APTERYX*.

Apteryx owenii, Gould in Proc. of Zool. Soc., part xv. p. 94.

Apteryx owenii, Gould, *Birds of Australia*, fol., vol. vi. pl. 3.

The acquisition of a new species of *Apteryx* is an evidence that our knowledge of the natural productions of New Zealand is far from complete.

The specimen from which my description was taken was sent to me by Mr. F. Strange, of Sydney, in 1850; since that time several others have come under my notice, all of which were from the South Island of New Zealand.

It is rendered conspicuously different from the *A. australis*, with which it accords in size, by the irregular transverse barring of the entire plumage, which, together with its extreme density and hair-like appearance, gives it more the resemblance of a mammal than of a bird; it has also a shorter, more slender, and more curved bill; and the feathers also differ in structure, being broader throughout, especially at the tip, and of a loose decomposed and hair-like texture.

"In the spurs of the Southern Alps, on Cook's Strait, in the province of Nelson," says Dr. Hochstetter, "that is, in the higher wooded mountain-valleys of the Wairau chain, and

westward of Blind Bay, in the wooded mountains between the Motucha and Aorere valleys, this species is still found in great numbers. During my stay in the province of Nelson I had two living examples, a male and a female. They were procured, by some natives I sent out for the purpose, in the upper wooded valleys of the river State, a confluent of the Aorere, in a country elevated from 2000 to 3000 feet above the sea-level."—*Nat. Hist. Rev.*, 1861, p. 505.

I have characterized this new species under the name of *Apteryx owenii*, feeling assured that it can only be considered a just compliment to Professor Owen, who has so ably investigated the remains of the extinct birds of New Zealand.

Face, head, and neck dull yellowish brown; throat somewhat paler; all the upper surface transversely rayed with blackish brown and fulvous, each individual feather being silvery brown at the base, darker brown in the middle, then crossed by a lunate mark of fulvous, to which succeeds an irregular mark of black, and terminated with fulvous; under surface paler than the upper, caused by each feather being crossed by three rays of fulvous instead of two, and more largely tipped with that colour; the feathers of the thighs resemble those of the back; bill dull yellowish horn-colour; feet and claws fleshy brown.

Total length 18 inches; bill—gape to lip $3\frac{5}{8}$, breadth at base $2\frac{1}{4}$; middle toe and nail $2\frac{1}{2}$; tarsi $2\frac{1}{4}$.

Family HIMANTOPODIDÆ.

Sp. 21. HIMANTOPUS NOVÆ-ZELANDIÆ, Gould.

NEW ZEALAND STILT.

Himantopus novæ-zelandiæ, Gould in Proc. of Zool. Soc., part ix. p. 8.

Himantopus Novæ-Zelandiæ, Gould, Birds of Australia, fol., vol. vi. pl. 25.

As might be expected, the colonization of New Zealand has

brought to light many ornithological novelties peculiar to those islands, the natural productions of which are even at this time so imperfectly known. The species here described is interesting, not so much for its beauty, as for its forming another member of the very limited genus *Himantopus*, of which until lately only one species was known. I regret to say that no information as to its habits, changes of plumage, or the localities in which it is found, has been acquired; the two specimens I have seen were merely labelled—"Waders killed at Port Nicholson." They are not only different from all other known species, but are also very dissimilar in plumage and in size, one being very much larger than the other; though the dissimilarity in size is not greater than I have observed to exist between the sexes of the White-headed Stilt. The least of the two, which I presume to be the female, has the whole of the plumage black or blackish brown; while the other has the forehead, the front of the neck, and the breast white; the tail and all the remainder of the plumage being black, like the other. I am inclined to believe that the difference in colouring is either attributable to youth, or that it is a seasonal character; in all probability, the entirely black plumage is that of summer.

The following is a description of the darkest-coloured bird figured in the folio edition of the 'Birds of Australia.'

The whole of the plumage sooty black, with the exception of the back, wings, and tail, which are glossed with green; bill black; feet pink red; the other specimen has the forehead, lores, chin, front, and sides of the neck, chest, and under tail-coverts white.

Total length 16 inches; bill 3; wing $9\frac{1}{4}$; tail $3\frac{1}{2}$; tarsi $3\frac{1}{4}$.

Family RALLIDÆ.**Genus NOTORNIS, Owen.**

In all probability the only known species of this form is the solitary remnant of a group of birds which was formerly numerous in New Zealand and the neighbouring islands.

Sp. 22. NOTORNIS MANTELLI, *Owen*.

MOHO.

Notornis mantelli, Owen in Trans. of Zool. Soc., vol. iii. p. 377.

Notornis mantelli, Gould, Birds of Australia, fol., Supplement, pl.

The acquisition of a new species is always a matter of great interest; but when, as in the present instance, it is of one so nearly extinct as to be only known to us previously by its fossil or semi-fossilized remains, the interest becomes enhanced in the highest degree; it is well known that the existence of the celebrated Dodo is all but traditionary, a fate which, but for Mr. Walter Mantell's fortunate acquisition of a living example, would probably have been shared by the present bird, the characters of which were first made known to us by Professor Owen from the semi-fossilized remains previously obtained and sent home by the same talented explorer after whom it is named.

That few living examples remain, is evident from the fact that the mounted specimen in Dr. Mantell's possession is the only one that has yet been seen; all the information respecting it that has been obtained is comprised in the following interesting account communicated by him to the Zoological Society of London, and published in their 'Proceedings' for 1850:—

“This bird was taken by some sealers who were pursuing their avocations in Dusky Bay. Perceiving the trail of a large and unknown bird on the snow with which the ground was

then covered, they followed the foot-prints till they obtained a sight of the *Notornis*, which their dogs instantly pursued, and after a long chase caught alive in the gully of a sound behind Resolution Island. It ran with great speed, and upon being captured uttered loud screams, and fought and struggled violently; it was kept alive three or four days on board the schooner and then killed, and the body roasted and ate by the crew, each partaking of the dainty, which was declared to be delicious. My son fortunately secured the skin.

“Mr. Walter Mantell states, that, according to the native traditions, a large Rail was contemporary with the Moa, and formed a principal article of food among their ancestors. It was known to the North Islanders by the name of ‘*Moho*,’ and to the South Islanders by that of ‘*Takahé*’; but the bird was considered by both natives and Europeans to have been long since exterminated by the wild cats and dogs, not an individual having been seen or heard of since the arrival of the English colonists. That intelligent observer, the Rev. Richard Taylor, who has so long resided in the islands, had never heard of a bird of this kind having been seen. In his ‘*Leaf from the Natural History of New Zealand*,’ under the head of ‘*Moho*,’ is the following note: ‘RAIL, colour black, said to be a wingless bird as large as a fowl, with red beak and legs; it is nearly exterminated by the cat: its cry was keo, keo.’” The inaccuracy and vagueness of this description proves it to be from native report and not from actual observation. To the natives of the paks or villages on the homeward route, and at Wellington, the bird was a perfect novelty and excited much interest. I may add, that upon comparing the head of the bird with the fossil cranium and mandibles, and the figures and descriptions in the ‘*Zoological Transactions*,’ my son was at once convinced of their identity; and so delighted was he by the discovery of a living example of one of the supposed extinct contemporaries of the Moa, that he immediately wrote to me, and mentioned that the skull and beaks were

alike in the recent and fossil specimens, and that the abbreviated and feeble development of the wings, both in their bones and plumage, were in perfect accordance with the indications afforded by the fossil humerus and sternum found by him at Waingongoro, and now in the British Museum, as pointed out by Professor Owen in the memoir above referred to.

“In concluding this brief narrative of the discovery of a living example of a genus of birds once contemporary with the colossal Moa, and hitherto only known by its fossil remains, I beg to remark that this highly interesting fact tends to confirm the conclusions expressed in my communications to the Geological Society—namely, that the *Dinornis*, *Palapteryx*, and related forms, were coeval with some of the existing species of birds peculiar to New Zealand, and that their final extinction took place at no very distant period, and long after the advent of the aboriginal Maories.”

Upon a cursory view of this bird it might be mistaken for a gigantic kind of *Porphyrio*, but on an examination of its structure it will be found to be generically distinct. It is allied to *Porphyrio* in the form of its bill and in its general colouring, and to *Tribonyx* in the structure of its feet, while in the feebleness of its wings and the structure of its tail it differs from both.

From personal observation of the habits of *Tribonyx* and *Porphyrio*, I may venture to affirm that the habits and economy of the present bird more closely resemble those of the former than those of the latter; that it is doubtless of a recluse and extremely shy disposition; that being deprived, by the feeble structure of its wing, of the power of flight, it is compelled to depend upon its swiftness of foot for the means of evading its natural enemies; and that as is the case with *Tribonyx*, a person may be in its vicinity for weeks without even catching a glimpse of it.

From the thickness of its plumage and the great length of its back-feathers, we may infer that it affects low and humid

situations, marshes, the banks of rivers, and the coverts of dripping ferns, so abundant in its native country; like *Porphyrio*, it doubtless enjoys the power of swimming, but would seem, from the structure of its legs, to be more terrestrial in its habits than the members of that genus.

I have carefully compared the bill of this example with that figured by Professor Owen under the name of *Notornis mantelli*, and have little doubt that they are referable to one and the same species.

I cannot conclude these remarks without bearing testimony to the very great importance of the results which have attended the researches of Mr. Walter Mantell in the various departments of science to which he has turned the attention of his inquiring mind, nor without expressing a hope that he may yet be enabled to obtain some particulars as to the history of this and the other remarkable birds of the country in which he is resident.

Head, neck, breast, upper part of the abdomen, and flanks purplish blue; back, rump, upper tail-coverts, lesser wing-coverts and tertiaries dark olive-green, tipped with verditer-green; at the nape of the neck a band of rich blue separating the purplish blue of the neck from the green of the body; wings rich deep blue, the greater coverts tipped with verditer-green, forming crescentic bands when the wing is expanded; tail dark green; lower part of the abdomen, vent, and thighs dull bluish black; under tail-coverts white; bill and feet bright red.

Total length of the body, 26 inches; bill, from the gape to the tip, $2\frac{1}{8}$; from the tip to the posterior edge of the plate on the forehead, 3; wing, $8\frac{1}{2}$; tail, $3\frac{1}{2}$; tarsi, $3\frac{1}{2}$; middle toe, 3; nail, $\frac{7}{8}$; hind toe, $\frac{7}{8}$; nail, $\frac{3}{4}$.

Family ANATIDÆ.

Genus SPATULA, Boie.

Sp. 23. SPATULA VARIEGATA, Gould.

VARIEGATED SHOVELLER.

Spatula variegata, Gould in Proc. of Zool. Soc., part xxiv. p. 95.

—— *rhynchotis*, G. R. Gray, in Dieft. Trav. in New Zeal., vol. ii. p. 198.

Spatula variegata, Gould, Birds of Australia, fol., Supplement, pl.

Among the novelties brought by Mr. Walter Mantell from New Zealand was a species of Shoveller Duck, which is certainly new to science, for with no one of the members of this well-defined and widely spread genus can it be confounded. Its nearest ally is the Australian species, *Spatula rhynchotis*; but it differs from it in its more variegated plumage, and in other particulars. Supposing it to have been collected at the same time as the fine Parrot *Nestor notabilis*, the Middle Island of New Zealand will be the part where at least it is occasionally found. It is somewhat strange that so large a bird as this duck should not have fallen to the gun of the collector before; yet, on the other hand, how seldom does the common Shoveller of Europe (*Spatula clypeata*) come under the notice of the sportsman; even in the parts of England where it is most common, he may pass years without an opportunity occurring for shooting one.

The *Spatula variegata*, which forms the fifth and is by far the handsomest species of the genus *Spatula*, is distinguished from the other members by the dark crescentic markings which decorate the feathers of the breast, sides of the neck, and scapularies. The species of this well-defined form previously described are *Spatula clypeata*, which inhabits Europe, North America, India, and China; *S. rhynchotis*, which is found throughout Australia; *S. maculata*, the habitat of which

is Chili and probably the neighbouring countries of Peru and Bolivia; and *S. capensis* of South Africa.

Crown of the head and space surrounding the base of the bill brownish black; on either side of the face between the bill and the eye a lunar-shaped streak of white, bounded posteriorly with speckles of black; cheeks, sides, and back of the neck dark grey with greenish reflexions; front of the neck dark brown, each feather narrowly fringed with white; back brownish black, the feathers of the upper part margined with greyish brown; feathers of the breast, sides of the lower part of the neck, the mantle and scapularies white, with a crescent of blackish brown near the tip; under surface dark chestnut blotched with black; flanks lighter chestnut barred with black; lesser wing-coverts dull greenish blue; greater wing-coverts dark brown, fringed at the tip with white; first elongated scapularies blue-grey, with a conspicuous line of white on the outer web next to the shaft, bounded posteriorly with black; the next blue-grey, margined on the inner web with white; the remainder greenish black, with a lengthened lanceolate mark of dull or brownish white down the centre of the apical half; speculum deep green; primaries dark brown with lighter shafts; under surface of the shoulder white; on each side of the vent a patch of white freckled with black; under tail-coverts black, tinged with shining green; tail dark brown; irides bright yellow; bill dark purplish black, the under mandible clouded with yellow; legs and feet yellow.

Up to the present time (Nov. 1865) no second specimen has reached Europe, and the colouring of the female is unknown to us.

Total length $16\frac{1}{2}$ inches; bill 3; wing $9\frac{1}{4}$; tail $4\frac{1}{2}$; tarsi $1\frac{5}{8}$.

Family PELECANIDÆ.

Genus PHALACROCORAX, *Brisson*.

Sp. 24. PHALACROCORAX PUNCTATUS.

SPOTTED CORMORANT.

Pelecanus punctatus, Sparm. Mus. Carls., vol. i. t. 10.

—— *nævus*, Gmel. Linn., vol. i. p. 575.

Phalacrocorax dilophus, Vieill.

—— *punctatus*, Steph. Cont. of Shaw's Gen. Zool., vol. xiii. p. 88.

—— *nævus*, Cuv. Règn. Anim., p. 565.

Graculus punctatus, G. R. Gray, App. Dieff. Trav. in New Zeal., vol. ii. p. 201.

Crested Shag, Cook's last Voy., vol. i. p. 151.

Spotted Shag, Lath. Gen. Syn., vol. vi. p. 602, pl. civ.

Pa-degga-degga, Aborigines of New Zealand.

***Phalacrocorax punctatus*, Gould, Birds of Australia, fol., vol. vii pl. 71.**

This beautiful species of Cormorant is a native of New Zealand; but although numbers of Europeans have now for many years visited those islands, it is extremely rare in our collections, and the following brief note by Latham is all that has been recorded respecting it.

“Frequent in Queen Charlotte's Sound; builds among the rocks, and not unfrequently on trees when growing near the water. The name it is there known by is *Pa-degga-degga*.”

It builds among rocks, and not unfrequently on trees when growing near the water.

Vertical and occipital crest, crown of the head, and throat sooty black; back of the neck, lower part of the back, and rump glossy green; a white stripe commencing above the eye passes down each side of the neck to the flanks; lower part of the neck, chest, and abdomen beautiful leaden grey; under tail-coverts and tail black; mantle, scapularies, and wings

brownish ash, all the feathers except the secondaries and primaries having a small spot of black at their tip; from the throat, sides, and back of the neck, and thighs, arise numerous plume-like white feathers of a soft loose texture; those on the sides and back of the neck are very numerous, but on the other parts they are few and thinly scattered.

THE following Table of the Range or Distribution of the Australian Birds so far as at present known is intended to indicate the species that have been found in each of the seven colonies into which Australia is divided. Zoologically speaking, these colonies are not so many natural provinces; at the same time we cannot fail to notice that the avifaunæ of New South Wales and Victoria are in the main very different from those of Western and Northern Australia; in which latter I include the Victoria River and Port Essington, or that portion of the country, parallel to the Cape York district, on the north-east coast, now forming part of Queensland. Those persons in either of the colonies who possess this Handbook may, by consulting the Table, at once see what species are found in the part of the country in which they may be residing, and, with very little trouble to themselves, improve the list by adding an asterisk in cases of omission.

Those species the names of which are printed in italics are not Australian, but are added for the reasons given at the commencement of the Appendix. With regard to the authorities for the names employed, I have pursued the same plan as that adopted in my other publications: that is, where the original generic and specific names remain unchanged, the name of the author is given; but where these names have been altered, it is omitted. In my own case, however, I have retained my name to such of the species originally described by me as are now adopted by ornithologists, notwithstanding that in many instances they have been placed in genera different from those to which I had assigned them.

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On a review of the above Table it will be seen that of the 670 species of birds found in Australia 400 have been observed in New South Wales, 427 in Queensland, 348 in Victoria, 312 in South Australia, 239 in Western Australia, 235 in Northern Australia, and 162 in Tasmania.

As might be expected, some species overstep the boundaries assigned to them, particularly where the physical features of the neighbouring division of the country do not materially differ from those in which they are mostly found: thus the luxuriant brushes of New South Wales and Queensland are alike frequented by the *Menura*, the *Rifle*, *Regent*, and many other birds which are absent from the Colonies where that kind of vegetation does not occur. There are, again, other species, such as the *Actiturus bartramius*, *Terekia cinerea*, and *Spatula clypeata*, which can only be considered as accidental visitors.

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